

SEQUENCE LISTING



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Arg Gly Ser His
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<220>
 <223> Description of Artificial Sequence: Synthetic
 peptide

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<220>
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<400> 3
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<210> 4
 <211> 1365
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 <213> Staphylococcus aureus

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 actgtcaatg atggaaaaga cttatcacaa gatgctcatg caaaagattt agaatctatg 180
 ggcatttctg ttgtaagtgg aagtcaccca ttaacgttgc ttgataataa tccaataatt 240
 gttaaaaatc ctggaatacc ttatacagta tctattattg atgaagcagt gaaacgaggt 300
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<211> 454

<212> PRT

<213> Staphylococcus aureus

<400> 5

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Leu Ser Lys Leu Gly Ala Asn Val Thr Val Asn Asp Gly Lys Asp Leu
      35              40              45

Ser Gln Asp Ala His Ala Lys Asp Leu Glu Ser Met Gly Ile Ser Val
      50              55              60

Val Ser Gly Ser His Pro Leu Thr Leu Leu Asp Asn Asn Pro Ile Ile
      65              70              75              80

Val Lys Asn Pro Gly Ile Pro Tyr Thr Val Ser Ile Ile Asp Glu Ala
      85              90              95

Val Lys Arg Gly Leu Lys Ile Leu Thr Glu Val Glu Leu Ser Tyr Leu
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Ile Ser Glu Ala Pro Ile Ile Ala Val Thr Gly Thr Asn Gly Lys Thr
      115             120             125

Thr Val Thr Ser Leu Ile Gly Asp Met Phe Lys Lys Ser Arg Leu Thr
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Gly Arg Leu Ser Gly Asn Ile Gly Tyr Val Ala Ser Lys Val Ala Gln
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Glu Val Lys Pro Thr Asp Tyr Leu Val Thr Glu Leu Ser Ser Phe Gln
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Leu Leu Gly Ile Glu Lys Tyr Lys Pro His Ile Ala Ile Ile Thr Asn
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Ile Tyr Ser Ala His Leu Asp Tyr His Glu Asn Leu Glu Asn Tyr Gln
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Asn Ala Lys Lys Gln Ile Tyr Lys Asn Gln Thr Glu Glu Asp Tyr Leu
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 Ala Lys Thr Leu Tyr Phe Ser Thr Gln Gln Glu Val Asp Gly Ile Tyr
 245 250 255
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 260 265 270
 Glu Asp Leu Val Leu Pro Gly Glu His Asn Leu Glu Asn Ile Leu Ala
 275 280 285
 Ala Val Leu Ala Cys Ile Leu Ala Gly Val Pro Ile Lys Ala Ile Ile
 290 295 300
 Asp Ser Leu Thr Thr Phe Ser Gly Ile Glu His Arg Leu Gln Tyr Val
 305 310 315 320
 Gly Thr Asn Arg Thr Asn Lys Tyr Tyr Asn Asp Ser Lys Ala Thr Asn
 325 330 335
 Thr Leu Ala Thr Gln Phe Ala Leu Asn Ser Phe Asn Gln Pro Ile Ile
 340 345 350
 Trp Leu Cys Gly Gly Leu Asp Arg Gly Asn Glu Phe Asp Glu Leu Ile
 355 360 365
 Pro Tyr Met Glu Asn Val Arg Ala Met Val Val Phe Gly Gln Thr Lys
 370 375 380
 Ala Lys Phe Ala Lys Leu Gly Asn Ser Gln Gly Lys Ser Val Ile Glu
 385 390 395 400
 Ala Asn Asn Val Glu Asp Ala Val Asp Lys Val Gln Asp Ile Ile Glu
 405 410 415
 Pro Asn Asp Val Val Leu Leu Ser Pro Ala Cys Ala Ser Trp Asp Gln
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 Tyr Ser Thr Phe Glu Glu Arg Gly Glu Lys Phe Ile Glu Arg Phe Arg
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 Ala His Leu Pro Ser Tyr
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<210> 6

<211> 1365

<212> DNA

<213> Staphylococcus aureus

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<210> 7

<211> 454

<212> PRT

<213> *Staphylococcus aureus*

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Ile Leu Val Val Gly Leu Ala Lys Ser Gly Tyr Glu Ala Ala Lys Leu
      20                      25          30

Leu Ser Lys Leu Gly Ala Asn Val Thr Val Asn Asp Gly Lys Asp Leu
      35                      40          45

Ser Gln Asp Ala His Ala Lys Asp Leu Glu Ser Met Gly Ile Ser Val
      50                      55          60

Val Ser Gly Ser His Pro Leu Thr Leu Leu Asp Asn Asn Pro Ile Ile
      65                      70          75          80

Val Lys Asn Pro Gly Ile Pro Tyr Thr Val Ser Ile Ile Asp Glu Ala
      85                      90          95

Val Lys Arg Gly Leu Lys Ile Leu Thr Glu Val Glu Leu Ser Tyr Leu
      100                     105          110

Ile Ser Glu Ala Pro Ile Ile Ala Val Thr Gly Thr Asn Gly Lys Thr
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Thr Val Thr Ser Leu Ile Gly Asp Met Phe Lys Lys Ser Arg Leu Thr
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Gly Arg Leu Ser Gly Asn Ile Gly Tyr Val Ala Ser Lys Val Ala Gln
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Glu Val Lys Pro Thr Asp Tyr Leu Val Thr Glu Leu Ser Ser Phe Gln
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 Ala Asn Asn Val Glu Asp Ala Val Asp Lys Val Gln Asp Ile Ile Glu
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 Pro Asn Asp Val Val Leu Leu Ser Pro Ala Cys Ala Ser Trp Asp Gln
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 Ala His Leu Pro Ser Tyr
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<220>
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 <213> Artificial Sequence

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<210> 18
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<211> 31

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<211> 31

<212> DNA

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<213> Staphylococcus aureus

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<211> 27

<212> PRT

<213> Staphylococcus aureus

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<210> 26
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 <213> *Staphylococcus aureus*

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<210> 27
 <211> 1335
 <212> DNA
 <213> *Staphylococcus aureus*

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<210> 28
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 <212> PRT
 <213> *Staphylococcus aureus*

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 20 25 30
 His Glu Val Gln Gly Ser Asp Ile Glu Asn Tyr Val Phe Thr Glu Val
 35 40 45
 Ala Leu Arg Asn Lys Gly Ile Lys Ile Leu Pro Phe Asp Ala Asn Asn
 50 55 60

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Tyr	Asn	Asp	Phe	Leu	Gly	Gln	Ile	Ile	Asp	Gln	Tyr	Thr	Ser	Val	Ala	
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Val	Thr	Gly	Ala	His	Gly	Lys	Thr	Ser	Thr	Thr	Gly	Leu	Leu	Ser	His	
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Phe	Asp	Ala	Phe	Gln	Glu	Met	Ala	His	Asn	Val	Lys	Lys	Gly	Ile	Ile	
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Ser	Arg	Thr	Gln	Ala	Phe	Leu	Asn	Glu	Phe	Ala	Glu	Ser	Leu	Ser	Lys	
		355					360					365				

Ala Asp Arg Val Phe Leu Cys Glu Ile Phe Gly Ser Ile Arg Glu Asn
370 375 380

Thr Gly Ala Leu Thr Ile Gln Asp Leu Ile Asp Lys Ile Glu Gly Ala
385 390 395 400

Ser Leu Ile Asn Glu Asp Ser Ile Asn Val Leu Glu Gln Phe Asp Asn
405 410 415

Ala Val Ile Leu Phe Met Gly Ala Gly Asp Ile Gln Lys Leu Gln Asn
420 425 430

Ala Tyr Leu Asp Lys Leu Gly Met Lys Asn Ala Phe
435 440

<210> 29

<211> 1335

<212> DNA

<213> Staphylococcus aureus

<400> 29

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atgagtaagg agttttatat aatgacacac tatcattttg tcggaattaa aggttctggc 60
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gagaactacg tatttacaga agttgctctt agaaataagg ggataaaaaat attaccattt 180
gatgctaata acataaaaga agatatggta gttatacaag gtaatgcatt cgcgagtagc 240
catgaagaaa tagtacgtgc acatcaattg aaattagatg ttgtaagtta taatgatttt 300
ttaggacaga ttattgatca atatacttca gtagctgtaa ctgggtgcaca tggtaaaact 360
tctacaacag gtttattatc acatgttatg aatgggtgata aaaagacttc atttttaatt 420
ggatgatggc caggtatggg attgcctgaa agtgattatt tcgcttttga ggcattgtgaa 480
tatagacgtc actttttaag ttataaacct gattacgcaa ttatgacaaa tattgatttc 540
gatcatcctg attattttta agatattaat gatgtttttg atgcattcca agaaatggca 600
cataatgtta aaaaagggtat tattgcttgg ggtgatgatg aacattttacg taaaattgaa 660
gcagatgttc caatttatta ttatggattt aaagattcgg atgacattta tgctcaaaat 720
attcaaatta cggataaagg tactgctttt gatgtgtatg tggatgggtga gttttatgat 780
cacttcctgt ctccacaata tggtgacat acagttttta atgcattagc tgtaattgctg 840
attagttatt tagagaagct agatgttaca aatattaaag aagcattaga aacgttttgg 900
ggtgttaaag gtcgtttcaa tgaaactaca attgcaaadc aagttattgt agatgattat 960
gcacaccatc caagagaaat tagtgctaca attgaaacag cacgaaagaa atatccacat 1020
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gaatttgcag aaagttttaag taaagcagat cgtgtattct tatgtgaaat ttttggatca 1140
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tcgttaatta atgaagattc tattaatgta ttagaacaat ttgataatgc tgttatttta 1260
tttatgggtg caggtgatat tcaaaaatta caaaatgcat atttagataa attaggcatg 1320
aaaaatgcgt tttaa                                     1335

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<210> 30

<211> 444

<212> PRT

<213> Staphylococcus aureus

<400> 30

Met Ser Lys Glu Phe Tyr Ile Met Thr His Tyr His Phe Val Gly Ile
1 5 10 15

Lys Gly Ser Gly Met Ser Ser Leu Ala Gln Ile Met His Asp Leu Gly
20 25 30

His	Glu	Val	Gln	Gly	Ser	Asp	Ile	Glu	Asn	Tyr	Val	Phe	Thr	Glu	Val
35						40						45			
Ala	Leu	Arg	Asn	Lys	Gly	Ile	Lys	Ile	Leu	Pro	Phe	Asp	Ala	Asn	Asn
50						55				60					
Ile	Lys	Glu	Asp	Met	Val	Val	Ile	Gln	Gly	Asn	Ala	Phe	Ala	Ser	Ser
65				70						75				80	
His	Glu	Glu	Ile	Val	Arg	Ala	His	Gln	Leu	Lys	Leu	Asp	Val	Val	Ser
				85				90						95	
Tyr	Asn	Asp	Phe	Leu	Gly	Gln	Ile	Ile	Asp	Gln	Tyr	Thr	Ser	Val	Ala
		100						105				110			
Val	Thr	Gly	Ala	His	Gly	Lys	Thr	Ser	Thr	Thr	Gly	Leu	Leu	Ser	His
		115				120						125			
Val	Met	Asn	Gly	Asp	Lys	Lys	Thr	Ser	Phe	Leu	Ile	Gly	Asp	Gly	Thr
130						135				140					
Gly	Met	Gly	Leu	Pro	Glu	Ser	Asp	Tyr	Phe	Ala	Phe	Glu	Ala	Cys	Glu
145				150						155				160	
Tyr	Arg	Arg	His	Phe	Leu	Ser	Tyr	Lys	Pro	Asp	Tyr	Ala	Ile	Met	Thr
				165				170						175	
Asn	Ile	Asp	Phe	Asp	His	Pro	Asp	Tyr	Phe	Lys	Asp	Ile	Asn	Asp	Val
		180						185				190			
Phe	Asp	Ala	Phe	Gln	Glu	Met	Ala	His	Asn	Val	Lys	Lys	Gly	Ile	Ile
195						200						205			
Ala	Trp	Gly	Asp	Asp	Glu	His	Leu	Arg	Lys	Ile	Glu	Ala	Asp	Val	Pro
210						215				220					
Ile	Tyr	Tyr	Tyr	Gly	Phe	Lys	Asp	Ser	Asp	Asp	Ile	Tyr	Ala	Gln	Asn
225				230						235				240	
Ile	Gln	Ile	Thr	Asp	Lys	Gly	Thr	Ala	Phe	Asp	Val	Tyr	Val	Asp	Gly
				245				250						255	
Glu	Phe	Tyr	Asp	His	Phe	Leu	Ser	Pro	Gln	Tyr	Gly	Asp	His	Thr	Val
		260						265				270			
Leu	Asn	Ala	Leu	Ala	Val	Ile	Ala	Ile	Ser	Tyr	Leu	Glu	Lys	Leu	Asp
		275				280						285			
Val	Thr	Asn	Ile	Lys	Glu	Ala	Leu	Glu	Thr	Phe	Gly	Gly	Val	Lys	Arg
290						295				300					
Arg	Phe	Asn	Glu	Thr	Thr	Ile	Ala	Asn	Gln	Val	Ile	Val	Asp	Asp	Tyr
305				310						315				320	
Ala	His	His	Pro	Arg	Glu	Ile	Ser	Ala	Thr	Ile	Glu	Thr	Ala	Arg	Lys
				325				330						335	

Lys	Tyr	Pro	His	Lys	Glu	Val	Val	Ala	Val	Phe	Gln	Pro	His	Thr	Phe
			340					345					350		
Ser	Arg	Thr	Gln	Ala	Phe	Leu	Asn	Glu	Phe	Ala	Glu	Ser	Leu	Ser	Lys
		355					360					365			
Ala	Asp	Arg	Val	Phe	Leu	Cys	Glu	Ile	Phe	Gly	Ser	Ile	Arg	Glu	Asn
	370					375					380				
Thr	Gly	Ala	Leu	Thr	Ile	Gln	Asp	Leu	Ile	Asp	Lys	Ile	Glu	Gly	Ala
385					390					395					400
Ser	Leu	Ile	Asn	Glu	Asp	Ser	Ile	Asn	Val	Leu	Glu	Gln	Phe	Asp	Asn
			405						410					415	
Ala	Val	Ile	Leu	Phe	Met	Gly	Ala	Gly	Asp	Ile	Gln	Lys	Leu	Gln	Asn
			420					425					430		
Ala	Tyr	Leu	Asp	Lys	Leu	Gly	Met	Lys	Asn	Ala	Phe				
	435						440								

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<210> 31
<211> 37
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic primer

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<400> 31
gcgggcgggccc atatgacagt attaacagat aaagtag
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37

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<210> 32
<211> 36
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic primer

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<400> 32
gcgcggatcc ttaaacaata tccaaaccac cgaatg
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36

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<210> 33
<211> 35
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 33
 gcggcggccc atatgaagga gttttatata atgac 35

<210> 34
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 34
 gcggcggccc atatgtttta tataatgaca cactatc 37

<210> 35
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 35
 gcggcggccc atatgataat gacacactat cattttg 37

<210> 36
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 36
 gcggcggccc atatgacaca ctatcatttt gtcg 34

<210> 37
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 37
 gcggcggccc atatgtatca ttttgtcgga attaaag 37

<210> 38
 <211> 39
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 38
 gcgcggatcc atttttcatg cctaatttat ctaaatatg 39

<210> 39
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 39
 gcgcggatcc catgcctaatttatctctaaat atg 33

<210> 40
 <211> 43
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 40
 gcgcggatcc taatttatct aaatatgcat tttgtaattt ttg 43

<210> 41
 <211> 37
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 41
 gcgcggatcc atctaaatat gcattttgta atttttg 37

<210> 42
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 42

gcgcggatcc atatgcattt tgtaattttt gaatatc

37

<210> 43

<211> 12

<212> PRT

<213> Staphylococcus aureus

<400> 43

His Lys Glu Val Val Ala Val Phe Gln Pro His Thr
1 5 10

<210> 44

<211> 13

<212> PRT

<213> Staphylococcus aureus

<400> 44

Lys Ala Asp Arg Val Phe Leu Cys Glu Ile Phe Gly Ser
1 5 10

<210> 45

<211> 19

<212> PRT

<213> Staphylococcus aureus

<400> 45

Asp His Thr Val Leu Asn Ala Leu Ala Val Ile Ala Ile Ser Tyr Leu
1 5 10 15

Glu Lys Leu

<210> 46

<211> 924

<212> DNA

<213> Staphylococcus aureus

<400> 46

gtgataaata	aagacatcta	tcaagcttta	caacaactta	tcccaaataga	aaaaattaaa	60
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attacccta	ctaaaaatga	agaagtacaa	gcagttgtta	aatatgccta	tcaaaatgag	180
attcctgtta	catatttagg	aaatggctca	aatattatta	tccgtgaagg	tggtattcgc	240
ggtattgtaa	ttagtttatt	atcactagat	catatcgaag	tatctgatga	tgcgataata	300
gccggtagcg	gcgctgcaat	tattgatgtc	tcacgtgttg	ctcttgatta	cgcacttact	360
ggccttgaat	ttgcatgtgg	tattccaggt	tcaattgggtg	gtgcagtgtg	tatgaatgct	420
ggcgcttatg	gtggcgaagt	taaagattgt	atagactatg	cgctttgcgt	aaacgaacaa	480
ggctcgttaa	ttaaacttac	aacaaaagaa	ttagagttag	attatcgtaa	tagcattatt	540
caaaaagaac	acttagttgt	attagaagct	gcatttactt	tagctcctgg	taaaatgact	600
gaaatacaag	ctaaaatgga	tgattttaaca	gaacgtagag	aatctaaaca	accttttagag	660


```

tattccttcat gtggtagtgt attccaaaga ccgcctgggc attttgcagg taaattgata 720
caagattcta atttgcaagg tcaccgtatt ggcggcgttg aagtttcaac caaacacgct 780
ggttttatgg taaatgtaga caatggaact gctacagatt atgaaaacct tattcattat 840
gtacaaaaga ccgtcaaaga aaaatttggc attgaattaa atcgtgaagt tcgcattatt 900
ggtgaacatc caaaggaatc gtaa                                     924

```

<210> 47

<211> 307

<212> PRT

<213> *Staphylococcus aureus*

<400> 47

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Val Ile Asn Lys Asp Ile Tyr Gln Ala Leu Gln Gln Leu Ile Pro Asn
  1                               5          10          15

Glu Lys Ile Lys Val Asp Glu Pro Leu Lys Arg Tyr Thr Tyr Thr Lys
          20          25          30

Thr Gly Gly Asn Ala Asp Phe Tyr Ile Thr Pro Thr Lys Asn Glu Glu
          35          40          45

Val Gln Ala Val Val Lys Tyr Ala Tyr Gln Asn Glu Ile Pro Val Thr
          50          55          60

Tyr Leu Gly Asn Gly Ser Asn Ile Ile Ile Arg Glu Gly Gly Ile Arg
  65          70          75          80

Gly Ile Val Ile Ser Leu Leu Ser Leu Asp His Ile Glu Val Ser Asp
          85          90          95

Asp Ala Ile Ile Ala Gly Ser Gly Ala Ala Ile Ile Asp Val Ser Arg
          100          105          110

Val Ala Leu Asp Tyr Ala Leu Thr Gly Leu Glu Phe Ala Cys Gly Ile
          115          120          125

Pro Gly Ser Ile Gly Gly Ala Val Tyr Met Asn Ala Gly Ala Tyr Gly
          130          135          140

Gly Glu Val Lys Asp Cys Ile Asp Tyr Ala Leu Cys Val Asn Glu Gln
          145          150          155          160

Gly Ser Leu Ile Lys Leu Thr Thr Lys Glu Leu Glu Leu Asp Tyr Arg
          165          170          175

Asn Ser Ile Ile Gln Lys Glu His Leu Val Val Leu Glu Ala Ala Phe
          180          185          190

Thr Leu Ala Pro Gly Lys Met Thr Glu Ile Gln Ala Lys Met Asp Asp
          195          200          205

Leu Thr Glu Arg Arg Glu Ser Lys Gln Pro Leu Glu Tyr Pro Ser Cys
          210          215          220

Gly Ser Val Phe Gln Arg Pro Pro Gly His Phe Ala Gly Lys Leu Ile
          225          230          235          240

```

Gln Asp Ser Asn Leu Gln Gly His Arg Ile Gly Gly Val Glu Val Ser
245 250 255

Thr Lys His Ala Gly Phe Met Val Asn Val Asp Asn Gly Thr Ala Thr
260 265 270

Asp Tyr Glu Asn Leu Ile His Tyr Val Gln Lys Thr Val Lys Glu Lys
275 280 285

Phe Gly Ile Glu Leu Asn Arg Glu Val Arg Ile Ile Gly Glu His Pro
290 295 300

Lys Glu Ser
305

<210> 48

<211> 924

<212> DNA

<213> Staphylococcus aureus

<400> 48

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gtgataaata aagacatcta tcaagcttta caacaactta tcccaaataa aaaaattaaa 60
gttgatgaac ctttaaaacg atacacttat actaaaacag gtggtaatgc cgactttttac 120
attaccctta ctaaaaatga agaagtacaa gcagttgtta aatatgccta tcgaaatgag 180
attcctgtta catatcttagg aaatggctca aatattatta tccgtgaagg tggatttcgc 240
ggtattgtaa ttagttttatt accactagat catatcgaag tatctgatga tgcgataata 300
gccggtagcg gcgctgcaat tattgatgtc tcacgtggtg ctgctgatta cgcacttact 360
ggccttgaat ttgcatgtgg tattccagggt tcaattgggtg gtgcagtgtg tatgaatgct 420
ggcgcttatg gtggcggaagt taaagattgt atagactatg cgctttgcgt aaacgaacaa 480
ggctcgtaa ttaaaacttac aacaaaagaa ttagagttag attatcgtaa tagcattatt 540
caaaaagaac acttagttgt attagaagct gcattttactt tagctcctgg taaaatgact 600
gaaatacaag ctaaaatgga tgatttaaca gaacgtagag aatctaaaca accttttagag 660
tattccttcat gtggtagtggt attccaaaga ccgcctgggc attttgcagg taaattgata 720
caagattcta atttgcaagg tcaccgtatt ggccggcggtg aagtttcaac caaacacgct 780
ggtttttatg taaatgtaga caatggaact gctacagatt atgaaaacct tattcattat 840
gtacaaaaga ccgtcaaaga aaaatttggc attgaattaa atcgtgaagt tcgcattatt 900
ggtgaacatc caaaggaatc gtaa 924
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<210> 49

<211> 307

<212> PRT

<213> Staphylococcus aureus

<400> 49

Val Ile Asn Lys Asp Ile Tyr Gln Ala Leu Gln Gln Leu Ile Pro Asn
1 5 10 15

Glu Lys Ile Lys Val Asp Glu Pro Leu Lys Arg Tyr Thr Tyr Thr Lys
20 25 30

Thr Gly Gly Asn Ala Asp Phe Tyr Ile Thr Pro Thr Lys Asn Glu Glu
35 40 45

Val Gln Ala Val Val Lys Tyr Ala Tyr Arg Asn Glu Ile Pro Val Thr
50 55 60

Tyr Leu Gly Asn Gly Ser Asn Ile Ile Ile Arg Glu Gly Gly Ile Arg
 65 70 75 80
 Gly Ile Val Ile Ser Leu Leu Pro Leu Asp His Ile Glu Val Ser Asp
 85 90 95
 Asp Ala Ile Ile Ala Gly Ser Gly Ala Ala Ile Ile Asp Val Ser Arg
 100 105 110
 Val Ala Arg Asp Tyr Ala Leu Thr Gly Leu Glu Phe Ala Cys Gly Ile
 115 120 125
 Pro Gly Ser Ile Gly Gly Ala Val Tyr Met Asn Ala Gly Ala Tyr Gly
 130 135 140
 Gly Glu Val Lys Asp Cys Ile Asp Tyr Ala Leu Cys Val Asn Glu Gln
 145 150 155 160
 Gly Ser Leu Ile Lys Leu Thr Thr Lys Glu Leu Glu Leu Asp Tyr Arg
 165 170 175
 Asn Ser Ile Ile Gln Lys Glu His Leu Val Val Leu Glu Ala Ala Phe
 180 185 190
 Thr Leu Ala Pro Gly Lys Met Thr Glu Ile Gln Ala Lys Met Asp Asp
 195 200 205
 Leu Thr Glu Arg Arg Glu Ser Lys Gln Pro Leu Glu Tyr Pro Ser Cys
 210 215 220
 Gly Ser Val Phe Gln Arg Pro Pro Gly His Phe Ala Gly Lys Leu Ile
 225 230 235 240
 Gln Asp Ser Asn Leu Gln Gly His Arg Ile Gly Gly Val Glu Val Ser
 245 250 255
 Thr Lys His Ala Gly Phe Met Val Asn Val Asp Asn Gly Thr Ala Thr
 260 265 270
 Asp Tyr Glu Asn Leu Ile His Tyr Val Gln Lys Thr Val Lys Glu Lys
 275 280 285
 Phe Gly Ile Glu Leu Asn Arg Glu Val Arg Ile Ile Gly Glu His Pro
 290 295 300
 Lys Glu Ser
 305

<210> 50

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 50
gcggcgggccc atatggataa ctacacctat agc 33

<210> 51
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 51
gcgcgggatcc ttagagttca aacaattcta cgctttc 37

<210> 52
<211> 8
<212> PRT
<213> Staphylococcus aureus

<400> 52
Val Gln Ala Val Val Lys Tyr Ala
1 5

<210> 53
<211> 14
<212> PRT
<213> Staphylococcus aureus

<400> 53
Val Lys Asp Cys Ile Asp Tyr Ala Leu Cys Val Asn Glu Gln
1 5 10

<210> 54
<211> 52
<212> PRT
<213> Staphylococcus aureus

<400> 54
Arg Gly Ile Val Ile Ser Leu Leu Ser Leu Asp His Ile Glu Val Ser
1 5 10 15

Asp Asp Ala Ile Ile Ala Gly Ser Gly Ala Ala Ile Ile Asp Val Ser
20 25 30

Arg Val Ala Leu Asp Tyr Ala Leu Thr Gly Leu Glu Phe Ala Cys Gly
35 40 45

Ile Pro Gly Ser
50

<210> 55
 <211> 921
 <212> DNA
 <213> *Staphylococcus aureus*

<400> 55
 atgacaagaa aaggatatgg ggaatcgaca ggtaagatta ttttaatagg agaacatgct 60
 gttacatttg gagagcctgc tattgcagta ccgtttaacg caggtaaaat caaagtttta 120
 atagaagcct tagagagcgg gaactattcg tctattaaaa gcgatgttta cgatgggatg 180
 ttatatgatg cgctgacca tcttaagtct ttgggtgaacc gttttgtaga attaaataat 240
 attacagagc cgctagcagt aacgatccaa acgaatttac caccatcacg tggattagga 300
 tcgagtgacg ctgtcgcggt tgcttttggt cgtgcaagtt atgatttttt agggaaatca 360
 ttaacgaaaag aagaactcat tgaaaaggct aattgggcag agcaaattgc acatgggtaa 420
 ccaagtggta ttgatacgca aacgattgta tcaggcaaac cagtttggtt caaaaaagg 480
 catgctgaaa cgttgaaaac gttaagttta gacggctata tggttggtat agatactgg 540
 gtgaaagggt caacaagaca agcagtagaa gatgttcata aactttgtga ggaccctcag 600
 tacatgtcac atgtaaaaca tatcggttaag ttagttttac gtgcgagtga tgtgattgaa 660
 catcataact ttgaagcctt agcggatatt tttaatgaat gtcatgcgga tttaaaggcg 720
 ttgacagtta gtcatgataa aatagaacaa ttaatgaaaa ttggtaaaga aaatgggtcg 780
 attgctggaa aacttactgg cgctggctcg ggtggaagta tgttattgct tgccaaagat 840
 ttaccaacag cgaaaaatat tgtaaaagct gtagaaaaag ctgggtgcagc acatacttgg 900
 attgagaatt taggaggtta a 921

<210> 56
 <211> 306
 <212> PRT
 <213> *Staphylococcus aureus*

<400> 56
 Met Thr Arg Lys Gly Tyr Gly Glu Ser Thr Gly Lys Ile Ile Leu Ile
 1 5 10 15
 Gly Glu His Ala Val Thr Phe Gly Glu Pro Ala Ile Ala Val Pro Phe
 20 25 30
 Asn Ala Gly Lys Ile Lys Val Leu Ile Glu Ala Leu Glu Ser Gly Asn
 35 40 45
 Tyr Ser Ser Ile Lys Ser Asp Val Tyr Asp Gly Met Leu Tyr Asp Ala
 50 55 60
 Pro Asp His Leu Lys Ser Leu Val Asn Arg Phe Val Glu Leu Asn Asn
 65 70 75 80
 Ile Thr Glu Pro Leu Ala Val Thr Ile Gln Thr Asn Leu Pro Pro Ser
 85 90 95
 Arg Gly Leu Gly Ser Ser Ala Ala Val Ala Val Ala Phe Val Arg Ala
 100 105 110
 Ser Tyr Asp Phe Leu Gly Lys Ser Leu Thr Lys Glu Glu Leu Ile Glu
 115 120 125
 Lys Ala Asn Trp Ala Glu Gln Ile Ala His Gly Lys Pro Ser Gly Ile
 130 135 140

Asp Thr Gln Thr Ile Val Ser Gly Lys Pro Val Trp Phe Gln Lys Gly
 145 150 155 160
 His Ala Glu Thr Leu Lys Thr Leu Ser Leu Asp Gly Tyr Met Val Val
 165 170 175
 Ile Asp Thr Gly Val Lys Gly Ser Thr Arg Gln Ala Val Glu Asp Val
 180 185 190
 His Lys Leu Cys Glu Asp Pro Gln Tyr Met Ser His Val Lys His Ile
 195 200 205
 Gly Lys Leu Val Leu Arg Ala Ser Asp Val Ile Glu His His Asn Phe
 210 215 220
 Glu Ala Leu Ala Asp Ile Phe Asn Glu Cys His Ala Asp Leu Lys Ala
 225 230 235 240
 Leu Thr Val Ser His Asp Lys Ile Glu Gln Leu Met Lys Ile Gly Lys
 245 250 255
 Glu Asn Gly Ala Ile Ala Gly Lys Leu Thr Gly Ala Gly Arg Gly Gly
 260 265 270
 Ser Met Leu Leu Leu Ala Lys Asp Leu Pro Thr Ala Lys Asn Ile Val
 275 280 285
 Lys Ala Val Glu Lys Ala Gly Ala Ala His Thr Trp Ile Glu Asn Leu
 290 295 300
 Gly Gly
 305

<210> 57
 <211> 921
 <212> DNA
 <213> Staphylococcus aureus

<400> 57
 atgacaagaa aaggatatgg ggaatcgaca ggtaagatta ttttaatatagg agaacatgct 60
 gttacatttg gagagcctgc tattgcagta ccgtttaacg caggtaaaat caaagtttta 120
 atagaagcct tagagagcgg gaactattcg tctattaaaa gcgatgttta cgatggatatg 180
 ttatatgatg cgctgacca tcttaagtct ttggtgaacc gttttgtaga attaaataat 240
 attacagagc cgctagcagt aacgatccaa acgaatttac caccatcacg tggattagga 300
 tcgagtgcag ctgtcgcggt tgcttttggt cgtgcaagtt atgatttttt agggaaatca 360
 ttaacgaaaag aagaactcat tgaagggtc aattgggcag agcaaattgc acatggtaaa 420
 ccaagtggta ttgatacgca aacgattgta tcaggcaaac cagtttggtt ccaaaaaggt 480
 catgctgaaa cgttgaaaac gttaagttaa gacggctata tggttgttat agatactgg 540
 gtgaaagggg caacaagaca agcagtagaa gatgttcata aactttgtga ggaccctcag 600
 tacatgtcac atgtaaaaca tatcggttaag ttagttttac gtgcgagtga tgtgattgaa 660
 catcataact ttgaagcctt agcggatatt tttaatgaat gtcatgcgga tttaaaggcg 720
 ttgacagtta gtcatgataa aatagaacaa ttaatgaaaa ttggtaaaga aaatgggtgcg 780
 attgctggaa aacttactgg cgctggcggt ggtggaagta tgttattgct tgccaaagat 840
 ttaccaacag cgaaaaatat tgtaaaaagc gtagaaaaag ctggtgcagc acatacttgg 900
 attgagaatt taggaggtta a 921

<210> 58
 <211> 306
 <212> PRT
 <213> Staphylococcus aureus

<400> 58
 Met Thr Arg Lys Gly Tyr Gly Glu Ser Thr Gly Lys Ile Ile Leu Ile
 1 5 10 15
 Gly Glu His Ala Val Thr Phe Gly Glu Pro Ala Ile Ala Val Pro Phe
 20 25 30
 Asn Ala Gly Lys Ile Lys Val Leu Ile Glu Ala Leu Glu Ser Gly Asn
 35 40 45
 Tyr Ser Ser Ile Lys Ser Asp Val Tyr Asp Gly Met Leu Tyr Asp Ala
 50 55 60
 Pro Asp His Leu Lys Ser Leu Val Asn Arg Phe Val Glu Leu Asn Asn
 65 70 75 80
 Ile Thr Glu Pro Leu Ala Val Thr Ile Gln Thr Asn Leu Pro Pro Ser
 85 90 95
 Arg Gly Leu Gly Ser Ser Ala Ala Val Ala Val Ala Phe Val Arg Ala
 100 105 110
 Ser Tyr Asp Phe Leu Gly Lys Ser Leu Thr Lys Glu Glu Leu Ile Glu
 115 120 125
 Lys Ala Asn Trp Ala Glu Gln Ile Ala His Gly Lys Pro Ser Gly Ile
 130 135 140
 Asp Thr Gln Thr Ile Val Ser Gly Lys Pro Val Trp Phe Gln Lys Gly
 145 150 155 160
 His Ala Glu Thr Leu Lys Thr Leu Ser Leu Asp Gly Tyr Met Val Val
 165 170 175
 Ile Asp Thr Gly Val Lys Gly Ser Thr Arg Gln Ala Val Glu Asp Val
 180 185 190
 His Lys Leu Cys Glu Asp Pro Gln Tyr Met Ser His Val Lys His Ile
 195 200 205
 Gly Lys Leu Val Leu Arg Ala Ser Asp Val Ile Glu His His Asn Phe
 210 215 220
 Glu Ala Leu Ala Asp Ile Phe Asn Glu Cys His Ala Asp Leu Lys Ala
 225 230 235 240
 Leu Thr Val Ser His Asp Lys Ile Glu Gln Leu Met Lys Ile Gly Lys
 245 250 255
 Glu Asn Gly Ala Ile Ala Gly Lys Leu Thr Gly Ala Gly Arg Gly Gly
 260 265 270

Ser Met Leu Leu Leu Ala Lys Asp Leu Pro Thr Ala Lys Asn Ile Val
 275 280 285 .

Lys Ala Val Glu Lys Ala Gly Ala Ala His Thr Trp Ile Glu Asn Leu
 290 295 300

Gly Gly
 305

<210> 59

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 59

gcggcggccc atatgacaag aaaaggatat ggg

33

<210> 60

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 60

gcgcgggatcc cggctctgta atattattta attc

34

<210> 61

<211> 20

<212> PRT

<213> Staphylococcus aureus

<400> 61

Ser Ser Ala Ala Val Ala Val Ala Phe Val Arg Ala Ser Tyr Asp Phe
 1 5 10 15

Leu Gly Lys Ser
 20

<210> 62

<211> 16

<212> PRT

<213> Staphylococcus aureus

<400> 62

Thr Leu Lys Thr Leu Ser Leu Asp Gly Tyr Met Val Val Ile Asp Thr
 1 5 10 15


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<210> 63
<211> 21
<212> PRT
<213> Staphylococcus aureus
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<400> 63
Tyr Met Ser His Val Lys His Ile Gly Lys Leu Val Leu Arg Ala Ser
1 5 10 15

Asp Val Ile Glu His
20

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<210> 64
<211> 960
<212> DNA
<213> Escherichia coli
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<400> 64						
atgagtctga	atttccttga	ttttgaacag	ccgattgcag	agctggaagc	gaaaatcgat	60
tctctgactg	cggttagccg	tcaggatgag	aaactggata	ttaacatcga	tgaagaagtg	120
catcgtctgc	gtgaaaaaag	cgtgaactcg	acacgtaaaa	tcttcgccga	tctcggtgca	180
tggcagattg	cgcaaatggc	agccactcca	cagcgctcct	ataccctgga	ttacgttcgc	240
ctggcatttg	atgaatttga	cgaactggcg	ggcgacgcgc	cgatagcaga	cgataaagct	300
atcgtcggtg	gtatcgcccg	tctcgatggt	cgtccggtga	tgatcattgg	tcataaaaaa	360
ggtcgtgaaa	ccaaagaaaa	aattcgccgt	aactttggta	tgccagcgcc	agaaggttac	420
cgaaagcac	tgcgtctgat	gcaaattggc	gaacgcttta	agatgcctat	catcaccttt	480
atcgacaccc	cggggcctta	tcttggcgtg	ggcgcagaag	agcgtgggtc	gtctgaagcc	540
attgcacgca	acctgcgtga	aatgtctcgc	ctcggcgtac	cggtagtttg	tacggttatc	600
ggtgaagggtg	gttctggcgg	tgcgctggcg	attggcgtgg	gcgataaagt	gaatatgctg	660
caatacagca	cctattccgt	tatctcgccg	gaaggttgtg	cgtccattct	gtggaagagc	720
gccgacaaa	cgccgctggc	ggctgaagcg	atgggtatca	ttgctccgcg	tctgaaagaa	780
ctgaaaactga	tcgactccat	catcccgga	ccactgggtg	gtgctcaccg	taaccctgga	840
gcgattggcgg	catcgctgaa	agccgcgaact	ctggcggatc	tggccgatct	cgacgtgtta	900
agcactgaag	atttaaaaaa	tcgctggtat	cagcgcctga	tgaqctacqq	ttacgcgtaa	960

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<210> 65
<211> 319
<212> PRT
<213> Escherichia coli
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<400> 65
Met Ser Leu Asn Phe Leu Asp Phe Glu Gln Pro Ile Ala Glu Leu Glu
1 5 10 15

Ala Lys Ile Asp Ser Leu Thr Ala Val Ser Arg Gln Asp Glu Lys Leu
20 25 30

Asp Ile Asn Ile Asp Glu Glu Val His Arg Leu Arg Glu Lys Ser Val
35 40 45

Glu Leu Thr Arg Lys Ile Phe Ala Asp Leu Gly Ala Trp Gln Ile Ala
50 55 60

Gln Leu Ala Arg His Pro Gln Arg Pro Tyr Thr Leu Asp Tyr Val Arg
65 70 75 80

Leu	Ala	Phe	Asp	Glu	Phe	Asp	Glu	Leu	Ala	Gly	Asp	Arg	Ala	Tyr	Ala	
				85					90					95		
Asp	Asp	Lys	Ala	Ile	Val	Gly	Gly	Ile	Ala	Arg	Leu	Asp	Gly	Arg	Pro	
			100				105				110					
Val	Met	Ile	Ile	Gly	His	Gln	Lys	Gly	Arg	Glu	Thr	Lys	Glu	Lys	Ile	
		115					120					125				
Arg	Arg	Asn	Phe	Gly	Met	Pro	Ala	Pro	Glu	Gly	Tyr	Arg	Lys	Ala	Leu	
		130					135					140				
Arg	Leu	Met	Gln	Met	Ala	Glu	Arg	Phe	Lys	Met	Pro	Ile	Ile	Thr	Phe	
		145					150					155				
Ile	Asp	Thr	Pro	Gly	Ala	Tyr	Pro	Gly	Val	Gly	Ala	Glu	Glu	Arg	Gly	
			165						170						175	
Gln	Ser	Glu	Ala	Ile	Ala	Arg	Asn	Leu	Arg	Glu	Met	Ser	Arg	Leu	Gly	
			180						185						190	
Val	Pro	Val	Val	Cys	Thr	Val	Ile	Gly	Glu	Gly	Gly	Ser	Gly	Gly	Ala	
		195					200							205		
Leu	Ala	Ile	Gly	Val	Gly	Asp	Lys	Val	Asn	Met	Leu	Gln	Tyr	Ser	Thr	
		210					215					220				
Tyr	Ser	Val	Ile	Ser	Pro	Glu	Gly	Cys	Ala	Ser	Ile	Leu	Trp	Lys	Ser	
		225					230					235				
Ala	Asp	Lys	Ala	Pro	Leu	Ala	Ala	Glu	Ala	Met	Gly	Ile	Ile	Ala	Pro	
			245								250				255	
Arg	Leu	Lys	Glu	Leu	Lys	Leu	Ile	Asp	Ser	Ile	Ile	Pro	Glu	Pro	Leu	
			260												270	
Gly	Gly	Ala	His	Arg	Asn	Pro	Glu	Ala	Met	Ala	Ala	Ser	Leu	Lys	Ala	
		275							280						285	
Gln	Leu	Leu	Ala	Asp	Leu	Ala	Asp	Leu	Asp	Val	Leu	Ser	Thr	Glu	Asp	
		290													300	
Leu	Lys	Asn	Arg	Arg	Tyr	Gln	Arg	Leu	Met	Ser	Tyr	Gly	Tyr	Ala		
		305													310	
										315						

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<210> 66
<211> 960
<212> DNA
<213> Escherichia coli
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<400> 66
atgagtctga atttccttga ttttgaacag ccgattgcag agctggaagc gaaaatcgat 60
tctctgactg cggtagccg tcaggatgag aaactggata ttaacatcga tgaagaagtg 120
ctcgtctcgc gtgaaaaaag cgtagaactg acacgtaaaa tcttcgccga tctcggtgca 180
tggcagattg cgcaactggc acgccatcca cagcgtcctt atacctgga ttacgttcgc 240
ctggcatttg atgaatttga cgaactggct ggcgaccgcg ccatatgcga cgataaaqct 300
```

```

atcgtcgggtg gtatcgccccg tctcgatggt cgtccgggtga tgatcattgg tcatcaaaaa 360
ggtcgtgaaa ccaaagaaaa aattcgccgt aactttggta tgccagcgcc agaagggttac 420
cgcaaagcac tgcgtctgat gcaaattggct gaacgcttta agatgcctat catcaccttt 480
atcgacaccc cgggggctta tcttggcgtg ggcgcgagaag agcgtgggtca gtctgaagcc 540
attgcacgca acctgcgtga aatgtctcgc ctcggcgtac cggtagtttg tacggttatc 600
ggtgaagggtg gttctggcgg tgcgctggcg attggcgtgg gcgataaagt gaatatgctg 660
caatacagca cctattccgt tatctcgccg gaagggttggt cgtccattct gtggaagagc 720
gccgacaaa ggcgctggc ggctgaagcg atgggtatca ttgctccgcg tctgaaagaa 780
ctgaaactga tcgactccat catcccggaa ccactgggtg gtgctcaccg taaccggaa 840
gcgatggcgg catcgttgaa agcgcaactg ctggcggatc tggccgatct cgacgtgtta 900
agcactgaag atttaaaaaa tcgtcgttat cagcgctga tgagctacgg ttacgcgtaa 960

```

<210> 67

<211> 319

<212> PRT

<213> *Escherichia coli*

<400> 67

```

Met Ser Leu Asn Phe Leu Asp Phe Glu Gln Pro Ile Ala Glu Leu Glu
 1              5              10              15

Ala Lys Ile Asp Ser Leu Thr Ala Val Ser Arg Gln Asp Glu Lys Leu
      20              25              30

Asp Ile Asn Ile Asp Glu Glu Val His Arg Leu Arg Glu Lys Ser Val
      35              40              45

Glu Leu Thr Arg Lys Ile Phe Ala Asp Leu Gly Ala Trp Gln Ile Ala
      50              55              60

Gln Leu Ala Arg His Pro Gln Arg Pro Tyr Thr Leu Asp Tyr Val Arg
      65              70              75              80

Leu Ala Phe Asp Glu Phe Asp Glu Leu Ala Gly Asp Arg Ala Tyr Ala
      85              90              95

Asp Asp Lys Ala Ile Val Gly Gly Ile Ala Arg Leu Asp Gly Arg Pro
      100             105             110

Val Met Ile Ile Gly His Gln Lys Gly Arg Glu Thr Lys Glu Lys Ile
      115             120             125

Arg Arg Asn Phe Gly Met Pro Ala Pro Glu Gly Tyr Arg Lys Ala Leu
      130             135             140

Arg Leu Met Gln Met Ala Glu Arg Phe Lys Met Pro Ile Ile Thr Phe
      145             150             155             160

Ile Asp Thr Pro Gly Ala Tyr Pro Gly Val Gly Ala Glu Glu Arg Gly
      165             170             175

Gln Ser Glu Ala Ile Ala Arg Asn Leu Arg Glu Met Ser Arg Leu Gly
      180             185             190

Val Pro Val Val Cys Thr Val Ile Gly Glu Gly Gly Ser Gly Gly Ala
      195             200             205

```

Leu Ala Ile Gly Val Gly Asp Lys Val Asn Met Leu Gln Tyr Ser Thr
 210 215 220
 Tyr Ser Val Ile Ser Pro Glu Gly Cys Ala Ser Ile Leu Trp Lys Ser
 225 230 235 240
 Ala Asp Lys Ala Pro Leu Ala Ala Glu Ala Met Gly Ile Ile Ala Pro
 245 250 255
 Arg Leu Lys Glu Leu Lys Leu Ile Asp Ser Ile Ile Pro Glu Pro Leu
 260 265 270
 Gly Gly Ala His Arg Asn Pro Glu Ala Met Ala Ala Ser Leu Lys Ala
 275 280 285
 Gln Leu Leu Ala Asp Leu Ala Asp Leu Asp Val Leu Ser Thr Glu Asp
 290 295 300
 Leu Lys Asn Arg Arg Tyr Gln Arg Leu Met Ser Tyr Gly Tyr Ala
 305 310 315

<210> 68
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 68
 gcggcgcccc atatgagtct gaatttcctt gattttg

37

<210> 69
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 69
 gcgcggatcc atcaaagcc aggcgaacg

29

<210> 70
 <211> 11
 <212> PRT
 <213> Escherichia coli

<400> 70
 Arg Leu Gly Val Pro Val Val Cys Thr Val Ile
 1 5 10

<210> 71
 <211> 21
 <212> PRT
 <213> *Escherichia coli*

<400> 71
 Ala Ala Ser Leu Lys Ala Gln Leu Leu Ala Asp Leu Ala Asp Leu Asp
 1 5 10 15
 Val Leu Ser Thr Glu
 20

<210> 72
 <211> 30
 <212> PRT
 <213> *Escherichia coli*

<400> 72
 Phe Ala Asp Leu Gly Ala Trp Gln Ile Ala Gln Leu Ala Arg His Pro
 1 5 10 15
 Gln Arg Pro Tyr Thr Leu Asp Tyr Val Arg Leu Ala Phe Asp
 20 25 30

<210> 73
 <211> 945
 <212> DNA
 <213> *Staphylococcus aureus*

<400> 73
 atggttagatt ttgaaaaaacc acttttttgaa attcgaaata aaattgaatc tttaaaagaa 60
 tctcaagata aaaatgatgt ggatttacaa gaagaaattg acatgcttga agcgtcattg 120
 gaacgagaaa ctaaaaaaat atatacaaat ctaaaaccat gggatcgtgt gcaaattgctg 180
 cgtttgcaag aaagacctac gaccctagat tatattccat atatctttga ttcgtttatg 240
 gaactacatg gtgatcgtaa ttttagagat gatccagcaa tgattggtgg tattggcttt 300
 ttaaattggtc gtgctgttac agttattgga caacaacgtg gaaaagatac aaaagataat 360
 atttatcgaa attttggtat ggcgcaccca gaagggtatc gaaaagcatt acgtttaatg 420
 aaacaagctg aaaaattcaa tcgtcctatc tttacattta tagatacaaa aggtgcataat 480
 cctggtaaaag ctgctgaaga acgtggacaa agtgaatcta tcgcaacaaa tttgattgag 540
 atggcttcat taaaagtacc agttattgctg attgtcattg gtgaagggtg cagtggaggt 600
 gctctaggta ttggtattgc caataaagta ttgatgttag agaatagtag ttactctgtt 660
 atatctcctg aagggtgcagc ggcatattta tggaaagaca gtaatttggc taaaattgca 720
 gctgaaacaa tgaaaattac tgcccatgat attaagcaat taggtattat agatgatgtc 780
 atttctgaac cacttggcgg tgacacataaa gatattgaac agcaagcttt agctattaaa 840
 tcagcgtttg ttgcacagtt agattcactt gagtcattat cacgtgatga aattgctaata 900
 gatcgctttg aaaaattcag aaatatcggt tcttatatag aataa 945

<210> 74
 <211> 314
 <212> PRT
 <213> *Staphylococcus aureus*

<400> 74

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Met Leu Asp Phe Glu Lys Pro Leu Phe Glu Ile Arg Asn Lys Ile Glu
 1          5          10          15

Ser Leu Lys Glu Ser Gln Asp Lys Asn Asp Val Asp Leu Gln Glu Glu
 20          25          30

Ile Asp Met Leu Glu Ala Ser Leu Glu Arg Glu Thr Lys Lys Ile Tyr
 35          40          45

Thr Asn Leu Lys Pro Trp Asp Arg Val Gln Ile Ala Arg Leu Gln Glu
 50          55          60

Arg Pro Thr Thr Leu Asp Tyr Ile Pro Tyr Ile Phe Asp Ser Phe Met
 65          70          75          80

Glu Leu His Gly Asp Arg Asn Phe Arg Asp Asp Pro Ala Met Ile Gly
 85          90          95

Gly Ile Gly Phe Leu Asn Gly Arg Ala Val Thr Val Ile Gly Gln Gln
100          105          110

Arg Gly Lys Asp Thr Lys Asp Asn Ile Tyr Arg Asn Phe Gly Met Ala
115          120          125

His Pro Glu Gly Tyr Arg Lys Ala Leu Arg Leu Met Lys Gln Ala Glu
130          135          140

Lys Phe Asn Arg Pro Ile Phe Thr Phe Ile Asp Thr Lys Gly Ala Tyr
145          150          155          160

Pro Gly Lys Ala Ala Glu Glu Arg Gly Gln Ser Glu Ser Ile Ala Thr
165          170          175

Asn Leu Ile Glu Met Ala Ser Leu Lys Val Pro Val Ile Ala Ile Val
180          185          190

Ile Gly Glu Gly Gly Ser Gly Gly Ala Leu Gly Ile Gly Ile Ala Asn
195          200          205

Lys Val Leu Met Leu Glu Asn Ser Thr Tyr Ser Val Ile Ser Pro Glu
210          215          220

Gly Ala Ala Ala Leu Leu Trp Lys Asp Ser Asn Leu Ala Lys Ile Ala
225          230          235          240

Ala Glu Thr Met Lys Ile Thr Ala His Asp Ile Lys Gln Leu Gly Ile
245          250          255

Ile Asp Asp Val Ile Ser Glu Pro Leu Gly Gly Ala His Lys Asp Ile
260          265          270

Glu Gln Gln Ala Leu Ala Ile Lys Ser Ala Phe Val Ala Gln Leu Asp
275          280          285

Ser Leu Glu Ser Leu Ser Arg Asp Glu Ile Ala Asn Asp Arg Phe Glu
290          295          300

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Lys Phe Arg Asn Ile Gly Ser Tyr Ile Glu
305 310

<210> 75

<211> 945

<212> DNA

<213> Staphylococcus aureus

<400> 75

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atgttagatt ttgaaaaacc actttttgaa attcgaaata aaattgaatc tttaaaagaa 60
tctcaagata aaaatgatgt ggattttacaa gaagaaattg acatgcttga agcgtcattg 120
gaacgagaaa ctaaaaaaat atatacaaat ctaaaacat gggatcgtgt gcaaattgcg 180
cgtttgcaag aaagacctac gaccctagat tatattccat atatctttga ttcgtttatg 240
gaactacatg gtgatcgtaa ttttagagat gatccagtaa tgattgggtgg tattggcttt 300
ttaaatggtc gtgctgttac agttattgga caacaacgtg gaaaagatac aaaagataat 360
atztatcgaa attttggtat ggcgcaccca gaaggttacc gaaaagcatt acgttttaatg 420
aaacaagctg aaaaattcaa tcgtcctatc tttacattta tagatacaaa aggtgcatat 480
cctggtaaa gctgctgaaga acgtggacaa agtgaatcta tcgcaacaaa tttgattgag 540
atggcttcat taaaagtacc agttattgag attgtcattg gtgaagggtg cagtggaggt 600
gctctaggtt ttggtattgc caataaagta ttgatgttag agaatagtag ttactctgtt 660
atatctcctg aagggtgcagc ggcattatta tggaaagaca gtaatttggc taaaattgca 720
gctgaaacaa tgaaaattac tgcccatgat attaagcaat taggtattat agatgatgtc 780
atctctgaac cacttggcgg tgcacataaa gatattgaac agcaagcttt agctattaaa 840
tcagcgtttg ttgcacagtt agattcactt gagtcattat cacgtgatga aattgctaatt 900
gatcgctttg aaaaattcag aaatatcggt tcttatatag aataa 945

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<210> 76

<211> 314

<212> PRT

<213> Staphylococcus aureus

<400> 76

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Met Leu Asp Phe Glu Lys Pro Leu Phe Glu Ile Arg Asn Lys Ile Glu
 1          5          10         15

Ser Leu Lys Glu Ser Gln Asp Lys Asn Asp Val Asp Leu Gln Glu Glu
          20          25          30

Ile Asp Met Leu Glu Ala Ser Leu Glu Arg Glu Thr Lys Lys Ile Tyr
          35          40          45

Thr Asn Leu Lys Pro Trp Asp Arg Val Gln Ile Ala Arg Leu Gln Glu
          50          55          60

Arg Pro Thr Thr Leu Asp Tyr Ile Pro Tyr Ile Phe Asp Ser Phe Met
          65          70          75          80

Glu Leu His Gly Asp Arg Asn Phe Arg Asp Asp Pro Val Met Ile Gly
          85          90          95

Gly Ile Gly Phe Leu Asn Gly Arg Ala Val Thr Val Ile Gly Gln Gln
          100         105         110

Arg Gly Lys Asp Thr Lys Asp Asn Ile Tyr Arg Asn Phe Gly Met Ala
          115         120         125

```

His Pro Glu Gly Tyr Arg Lys Ala Leu Arg Leu Met Lys Gln Ala Glu
 130 135 140
 Lys Phe Asn Arg Pro Ile Phe Thr Phe Ile Asp Thr Lys Gly Ala Tyr
 145 150 155 160
 Pro Gly Lys Ala Ala Glu Glu Arg Gly Gln Ser Glu Ser Ile Ala Thr
 165 170 175
 Asn Leu Ile Glu Met Ala Ser Leu Lys Val Pro Val Ile Ala Ile Val
 180 185 190
 Ile Gly Glu Gly Gly Ser Gly Gly Ala Leu Gly Ile Gly Ile Ala Asn
 195 200 205
 Lys Val Leu Met Leu Glu Asn Ser Thr Tyr Ser Val Ile Ser Pro Glu
 210 215 220
 Gly Ala Ala Ala Leu Leu Trp Lys Asp Ser Asn Leu Ala Lys Ile Ala
 225 230 235 240
 Ala Glu Thr Met Lys Ile Thr Ala His Asp Ile Lys Gln Leu Gly Ile
 245 250 255
 Ile Asp Asp Val Ile Ser Glu Pro Leu Gly Gly Ala His Lys Asp Ile
 260 265 270
 Glu Gln Gln Ala Leu Ala Ile Lys Ser Ala Phe Val Ala Gln Leu Asp
 275 280 285
 Ser Leu Glu Ser Leu Ser Arg Asp Glu Ile Ala Asn Asp Arg Phe Glu
 290 295 300
 Lys Phe Arg Asn Ile Gly Ser Tyr Ile Glu
 305 310

<210> 77
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 77
 gcggcggccc atatgttaga ttttgaaaaa ccactttttg

40

<210> 78
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 78
gcgcgggatcc accatgtagt tccataaacg aatc

34

<210> 79
<211> 15
<212> PRT
<213> Staphylococcus aureus

<400> 79
Met Ala Ser Leu Lys Val Pro Val Ile Ala Ile Val Ile Gly Glu
1 5 10 15

<210> 80
<211> 20
<212> PRT
<213> Staphylococcus aureus

<400> 80
Gln Gln Ala Leu Ala Ile Lys Ser Ala Phe Val Ala Gln Leu Asp Ser
1 5 10 15

Leu Glu Ser Leu
20

<210> 81
<211> 10
<212> PRT
<213> Staphylococcus aureus

<400> 81
Thr Leu Asp Tyr Ile Pro Tyr Ile Phe Asp
1 5 10

<210> 82
<211> 1356
<212> DNA
<213> Staphylococcus aureus

<400> 82
atgggaaaaat attttggtac agacggagta agaggtgtcg caaaccaaga actaacacct 60
gaattggcat ttaaattagg aagatacggg ggctatgttc tagcacataa taaagggtgaa 120
aaacacccac gtgtacttgt aggtcgcgat actagagttt cagggtgaaat gttagaatca 180
gcattaatag ctgggttgat ttcaattggg gcagaagtga tgcgattagg tattatttca 240
acaccagggtg ttgcatattht aacacgcgat atgggtgcag agttagggtg aatgatttca 300
gcctctcata atccagttgc agataatggg attaaattct ttggatcaga tggtttttaa 360
ctatcagatg aacaagaaaa tgaaattgaa gcattattgg atcaagaaaa cccagaatta 420
ccaagaccag ttggcaatga tattgtacat tattcagatt actttgaagg ggcacaaaaa 480
tatttgagct atttaaaatc aacagtagat gtttaactttg aaggtttgaa aattgcttta 540
gatggtgcaa atgggtcaac atcatcacta gcgccattct tatttggtga cttagaagca 600
gatactgaaa caattggatg tagtcctgat ggatataata tcaatgagaa atgtggctct 660
acacatcctg aaaaattagc tgaaaaagta gttgaaactg aaagtgattt tgggttagca 720
tttgacggcg atggagacag aatcatagca gtagatgaga atgggtcaaat cgttgacggg 780
gaccaaatta tggttattat tgggtcaagaa atgcataaaa atcaagaatt gaataatgac 840

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atgattgttt ctactgttat gagtaattta ggttttttaca aagcgcttga acaagaagga 900
attaaatcta ataaaactaa agttggcgac agatatgtag tagaagaaat gcgtcgcggt 960
aattataact taggtggaga acaatctgga catatcggtta tgatggatta caatacaact 1020
ggtgatggtt tattaactgg tattcaatta gcttctgtaa taaaaatgac tggtaaataca 1080
ctaagtgaat tagctggaca aatgaaaaaa tatccacaat cattaattaa cgtagcgcta 1140
acagataaat atcgtgttga agaaaatggt gacgttaaag aagttatgac taaagtagaa 1200
gtagaaatga atggagaagg tcgaatttta gtaagacctt ctggaacaga accattagtt 1260
cgtgtcatgg ttgaagcagc aactgatgaa gatgctgaaa gatttgcaca acaaatagct 1320
gatgtggttc aagataaaat gggattagat aaataa 1356

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<210> 83

<211> 451

<212> PRT

<213> Staphylococcus aureus

<400> 83

```

Met Gly Lys Tyr Phe Gly Thr Asp Gly Val Arg Gly Val Ala Asn Gln
  1             5             10             15

Glu Leu Thr Pro Glu Leu Ala Phe Lys Leu Gly Arg Tyr Gly Gly Tyr
      20             25             30

Val Leu Ala His Asn Lys Gly Glu Lys His Pro Arg Val Leu Val Gly
      35             40             45

Arg Asp Thr Arg Val Ser Gly Glu Met Leu Glu Ser Ala Leu Ile Ala
      50             55             60

Gly Leu Ile Ser Ile Gly Ala Glu Val Met Arg Leu Gly Ile Ile Ser
      65             70             75             80

Thr Pro Gly Val Ala Tyr Leu Thr Arg Asp Met Gly Ala Glu Leu Gly
      85             90             95

Val Met Ile Ser Ala Ser His Asn Pro Val Ala Asp Asn Gly Ile Lys
      100            105            110

Phe Phe Gly Ser Asp Gly Phe Lys Leu Ser Asp Glu Gln Glu Asn Glu
      115            120            125

Ile Glu Ala Leu Leu Asp Gln Glu Asn Pro Glu Leu Pro Arg Pro Val
      130            135            140

Gly Asn Asp Ile Val His Tyr Ser Asp Tyr Phe Glu Gly Ala Gln Lys
      145            150            155            160

Tyr Leu Ser Tyr Leu Lys Ser Thr Val Asp Val Asn Phe Glu Gly Leu
      165            170            175

Lys Ile Ala Leu Asp Gly Ala Asn Gly Ser Thr Ser Ser Leu Ala Pro
      180            185            190

Phe Leu Phe Gly Asp Leu Glu Ala Asp Thr Glu Thr Ile Gly Cys Ser
      195            200            205

Pro Asp Gly Tyr Asn Ile Asn Glu Lys Cys Gly Ser Thr His Pro Glu
      210            215            220

```

Lys Leu Ala Glu Lys Val Val Glu Thr Glu Ser Asp Phe Gly Leu Ala
 225 230 235 240
 Phe Asp Gly Asp Gly Asp Arg Ile Ile Ala Val Asp Glu Asn Gly Gln
 245 250 255
 Ile Val Asp Gly Asp Gln Ile Met Phe Ile Ile Gly Gln Glu Met His
 260 265 270
 Lys Asn Gln Glu Leu Asn Asn Asp Met Ile Val Ser Thr Val Met Ser
 275 280 285
 Asn Leu Gly Phe Tyr Lys Ala Leu Glu Gln Glu Gly Ile Lys Ser Asn
 290 295 300
 Lys Thr Lys Val Gly Asp Arg Tyr Val Val Glu Glu Met Arg Arg Gly
 305 310 315 320
 Asn Tyr Asn Leu Gly Gly Glu Gln Ser Gly His Ile Val Met Met Asp
 325 330 335
 Tyr Asn Thr Thr Gly Asp Gly Leu Leu Thr Gly Ile Gln Leu Ala Ser
 340 345 350
 Val Ile Lys Met Thr Gly Lys Ser Leu Ser Glu Leu Ala Gly Gln Met
 355 360 365
 Lys Lys Tyr Pro Gln Ser Leu Ile Asn Val Arg Val Thr Asp Lys Tyr
 370 375 380
 Arg Val Glu Glu Asn Val Asp Val Lys Glu Val Met Thr Lys Val Glu
 385 390 395 400
 Val Glu Met Asn Gly Glu Gly Arg Ile Leu Val Arg Pro Ser Gly Thr
 405 410 415
 Glu Pro Leu Val Arg Val Met Val Glu Ala Ala Thr Asp Glu Asp Ala
 420 425 430
 Glu Arg Phe Ala Gln Gln Ile Ala Asp Val Val Gln Asp Lys Met Gly
 435 440 445
 Leu Asp Lys
 450

<210> 84

<211> 1356

<212> DNA

<213> Staphylococcus aureus

<400> 84

atgggaaaat attttggtac agacggagta agagggtgtcg caaaccaaga actaacacct 60
 gaattggcat ttaaattagg aagatacggg ggctatgttc tagcacataa taaagggtgaa 120
 aacacccac gtgtacttgt aggtcgcgat actagagttt cagggtgaaat gttagaatca 180
 gcattaatag ctggtttgat ttcaattggg gcagaagtga tgcgattagg tattatttca 240
 acaccaggtg ttgcatatth aacacgcgat atgggtgcag agttagggtg aatgatttca 300

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gcctctcata atccagttgc agataatggt attaaattct ttggatcaga tgggttttaa 360
ctatcagatg aacaagaaaa tgaaattgaa gcattattgg atcaagaaaa cccagaatta 420
ccaagaccag ttggcaatga tattgtacat tattcagatt actttgaagg ggcacaaaaa 480
tatttgagct atttaaaatc aacagtagat gttaactttg aaggtttgaa aattgcttta 540
gatggtgcaa atggttcaac atcatcacta gcgccattct tatttgggtga cttagaagca 600
gatactgaaa caattggatg tagtcctgat ggatataata tcaatgagaa atgtggctct 660
acacatcctg aaaaattagc tgaaaaagta gttgaaactg aaagtgattt tgggttagca 720
tttgacggcg atggagacag aatcatagca gtagatgaga atgggtcaa atcggtgacgg 780
gaccaaatta tggtttattat tgggtcaagaa atgcataaaa atcaagaatt gaataatgac 840
atgattgttt ctactgttat gagtaattta ggtttttaca aagcgcttga acaagaagga 900
attaaatcta ataaaactaa agttggcgac agatatgtag tagaagaaat gcgtcgcgg 960
aattataact taggtggaga acaatctgga catatcgtaa tgatggatta caatacaact 1020
ggatgatgggt tattaactgg tattcaatta gcttctgtaa taaaaatgac tggtaaatca 1080
ctaagtgaat tagctggaca aatgaaaaaa tatccacaat cattaattaa cgtacgcgta 1140
acagataaat atcgtgttga agaaaatgtt gacgttaaag aagttatgac taaagtagaa 1200
gtagaaatga atggagaagg tcgaatttta gtaagacctt ctggaacaga accattagtt 1260
cgtgtcatgg ttgaagcagc aactgatgaa gatgctgaaa gatttgcaca acaaatagct 1320
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<210> 85

<211> 451

<212> PRT

<213> Staphylococcus aureus

<400> 85

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Met Gly Lys Tyr Phe Gly Thr Asp Gly Val Arg Gly Val Ala Asn Gln
  1              5              10              15

Glu Leu Thr Pro Glu Leu Ala Phe Lys Leu Gly Arg Tyr Gly Gly Tyr
      20              25              30

Val Leu Ala His Asn Lys Gly Glu Lys His Pro Arg Val Leu Val Gly
      35              40              45

Arg Asp Thr Arg Val Ser Gly Glu Met Leu Glu Ser Ala Leu Ile Ala
      50              55              60

Gly Leu Ile Ser Ile Gly Ala Glu Val Met Arg Leu Gly Ile Ile Ser
      65              70              75              80

Thr Pro Gly Val Ala Tyr Leu Thr Arg Asp Met Gly Ala Glu Leu Gly
      85              90              95

Val Met Ile Ser Ala Ser His Asn Pro Val Ala Asp Asn Gly Ile Lys
      100             105             110

Phe Phe Gly Ser Asp Gly Phe Lys Leu Ser Asp Glu Gln Glu Asn Glu
      115             120             125

Ile Glu Ala Leu Leu Asp Gln Glu Asn Pro Glu Leu Pro Arg Pro Val
      130             135             140

Gly Asn Asp Ile Val His Tyr Ser Asp Tyr Phe Glu Gly Ala Gln Lys
      145             150             155             160

Tyr Leu Ser Tyr Leu Lys Ser Thr Val Asp Val Asn Phe Glu Gly Leu
      165             170             175

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Lys Ile Ala Leu Asp Gly Ala Asn Gly Ser Thr Ser Ser Leu Ala Pro
 180 185 190
 Phe Leu Phe Gly Asp Leu Glu Ala Asp Thr Glu Thr Ile Gly Cys Ser
 195 200 205
 Pro Asp Gly Tyr Asn Ile Asn Glu Lys Cys Gly Ser Thr His Pro Glu
 210 215 220
 Lys Leu Ala Glu Lys Val Val Glu Thr Glu Ser Asp Phe Gly Leu Ala
 225 230 235 240
 Phe Asp Gly Asp Gly Asp Arg Ile Ile Ala Val Asp Glu Asn Gly Gln
 245 250 255
 Ile Val Asp Gly Asp Gln Ile Met Phe Ile Ile Gly Gln Glu Met His
 260 265 270
 Lys Asn Gln Glu Leu Asn Asn Asp Met Ile Val Ser Thr Val Met Ser
 275 280 285
 Asn Leu Gly Phe Tyr Lys Ala Leu Glu Gln Glu Gly Ile Lys Ser Asn
 290 295 300
 Lys Thr Lys Val Gly Asp Arg Tyr Val Val Glu Glu Met Arg Arg Gly
 305 310 315 320
 Asn Tyr Asn Leu Gly Gly Glu Gln Ser Gly His Ile Val Met Met Asp
 325 330 335
 Tyr Asn Thr Thr Gly Asp Gly Leu Leu Thr Gly Ile Gln Leu Ala Ser
 340 345 350
 Val Ile Lys Met Thr Gly Lys Ser Leu Ser Glu Leu Ala Gly Gln Met
 355 360 365
 Lys Lys Tyr Pro Gln Ser Leu Ile Asn Val Arg Val Thr Asp Lys Tyr
 370 375 380
 Arg Val Glu Glu Asn Val Asp Val Lys Glu Val Met Thr Lys Val Glu
 385 390 395 400
 Val Glu Met Asn Gly Glu Gly Arg Ile Leu Val Arg Pro Ser Gly Thr
 405 410 415
 Glu Pro Leu Val Arg Val Met Val Glu Ala Ala Thr Asp Glu Asp Ala
 420 425 430
 Glu Arg Phe Ala Gln Gln Ile Ala Asp Val Val Gln Asp Lys Met Gly
 435 440 445
 Leu Asp Lys
 450

<210> 86
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 86
 gcggcgggccc atatgggaaa atattttggt acag 34

<210> 87
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 87
 gcgcgggatcc aacacctggt gttgaaataa tac 33

<210> 88
 <211> 10
 <212> PRT
 <213> Staphylococcus aureus

<400> 88
 Thr Glu Pro Leu Val Arg Val Met Val Glu
 1 5 10

<210> 89
 <211> 12
 <212> PRT
 <213> Staphylococcus aureus

<400> 89
 Leu Thr Gly Ile Gln Leu Ala Ser Val Ile Lys Met
 1 5 10

<210> 90
 <211> 9
 <212> PRT
 <213> Staphylococcus aureus

<400> 90
 His Pro Arg Val Leu Val Gly Arg Asp
 1 5

<210> 91
 <211> 1044
 <212> DNA
 <213> Streptococcus pneumoniae

<400> 91
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 ctttcagctg agagtgtcat gcgtgcgggc gattacgacc gtttcacagt caagactttc 120
 tttatcagtc agtcagggtga ctttatcaaa acacaggaat ttagtcatgc tccggggcaa 180
 gaagaccgtc tcatgaccaa tgaaaccatt gattgggata agaaagttgc accaagtgtc 240
 atctacgaag aaggtgcagt ggtctttcca gtccttcacg ggccaatggg agaagatggc 300
 tctgttcaag gattcttgga agttttgaaa atgccttacg ttggttgcaa cattttgtca 360
 tcaagtcttg ccatggataa aatcacgact aagcgtgttc tggaatctgc tggatttgcc 420
 caagttcctt atgtggctat cgttgaaggc gatgatgtga ctgctaaaat cgctgaagtg 480
 gaagaaaaat tggccttatcc agtcttcact aagccgtcaa acatgggggtc tagtgctcgg 540
 atttctaagt ctgaaaacca agaagaactc cgtcaagcct taaaacttgc cttccgatat 600
 gacagccgtg tcttggttga gcaaggagtg aatgcccggt aaattgaggt tggcctcttg 660
 ggtaactacg atgtcaagag cacgctacca ggagaagttg tcaaggacgt tgccttttat 720
 gactacgatg ccaagtatat tgataacaat attactatgg atattcctgc caaaatcagt 780
 gatgatgtgg tggctgtcat gcgtcaaaat gcagaaacag ccttccgtgc cattgggtggc 840
 cttggtctat ctcgttgcga tttcttctat acagataagg gagagatttt tctcaacgag 900
 ctcaatacta tgccagggtt caccagtggt tctatgtacc cactactttg ggacaatatg 960
 gggatcagct acccaaaact aatcgagcgt ttggttgacc ttgccaagga aagttttgac 1020
 aagcgcgaag cgcatttgat ataa 1044

<210> 92
 <211> 347
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 92
 Met Lys Gln Thr Ile Ile Leu Leu Tyr Gly Gly Arg Ser Ala Glu Arg
 1 5 10 15
 Glu Val Ser Val Leu Ser Ala Glu Ser Val Met Arg Ala Val Asp Tyr
 20 25 30
 Asp Arg Phe Thr Val Lys Thr Phe Phe Ile Ser Gln Ser Gly Asp Phe
 35 40 45
 Ile Lys Thr Gln Glu Phe Ser His Ala Pro Gly Gln Glu Asp Arg Leu
 50 55 60
 Met Thr Asn Glu Thr Ile Asp Trp Asp Lys Lys Val Ala Pro Ser Ala
 65 70 75 80
 Ile Tyr Glu Glu Gly Ala Val Val Phe Pro Val Leu His Gly Pro Met
 85 90 95
 Gly Glu Asp Gly Ser Val Gln Gly Phe Leu Glu Val Leu Lys Met Pro
 100 105 110
 Tyr Val Gly Cys Asn Ile Leu Ser Ser Ser Leu Ala Met Asp Lys Ile
 115 120 125
 Thr Thr Lys Arg Val Leu Glu Ser Ala Gly Ile Ala Gln Val Pro Tyr
 130 135 140

Val Ala Ile Val Glu Gly Asp Asp Val Thr Ala Lys Ile Ala Glu Val
 145 150 155 160
 Glu Glu Lys Leu Ala Tyr Pro Val Phe Thr Lys Pro Ser Asn Met Gly
 165 170 175
 Ser Ser Val Gly Ile Ser Lys Ser Glu Asn Gln Glu Glu Leu Arg Gln
 180 185 190
 Ala Leu Lys Leu Ala Phe Arg Tyr Asp Ser Arg Val Leu Val Glu Gln
 195 200 205
 Gly Val Asn Ala Arg Glu Ile Glu Val Gly Leu Leu Gly Asn Tyr Asp
 210 215 220
 Val Lys Ser Thr Leu Pro Gly Glu Val Val Lys Asp Val Ala Phe Tyr
 225 230 235 240
 Asp Tyr Asp Ala Lys Tyr Ile Asp Asn Asn Ile Thr Met Asp Ile Pro
 245 250 255
 Ala Lys Ile Ser Asp Asp Val Val Ala Val Met Arg Gln Asn Ala Glu
 260 265 270
 Thr Ala Phe Arg Ala Ile Gly Gly Leu Gly Leu Ser Arg Cys Asp Phe
 275 280 285
 Phe Tyr Thr Asp Lys Gly Glu Ile Phe Leu Asn Glu Leu Asn Thr Met
 290 295 300
 Pro Gly Phe Thr Gln Trp Ser Met Tyr Pro Leu Leu Trp Asp Asn Met
 305 310 315 320
 Gly Ile Ser Tyr Pro Lys Leu Ile Glu Arg Leu Val Asp Leu Ala Lys
 325 330 335
 Glu Ser Phe Asp Lys Arg Glu Ala His Leu Ile
 340 345

<210> 93

<211> 1044

<212> DNA

<213> Streptococcus pneumoniae

<400> 93

atgaaacaaa cgattattct tttatatggt ggacggagtg cggaacgcga agtctctgtc 60
 ctttcagctg agagtgtcat gcgtgcggtc aattacgacc gtttcacagt caagactttc 120
 tttatcagtc agtcaggtga ctttatcaaa acacaggaat ttagtcatgc tccggggcaa 180
 gaagaccgtc tcatgaccaa tgaaaccatt gattgggata agaaagttgc accaagtgtc 240
 atctacgaag aaggtgcagt ggtctttcca gtccttcacg ggccaatggg agaagatggc 300
 tctgttcaag gattcttgga agttttgaaa atgccttacg ttggttgcaa cattttgtca 360
 tcaagtcttg ccatggataa aatcacgact aagcgtgttc tggaaatctgc tggatttgcc 420
 caagttcctt atgtggctat cgttgaaggc gatgatgtga ctgctaaaat cgctgaagtg 480
 gaagaaaaat tggcttatcc agtcttcatt aagccgtcaa acatgggggtc tagtgtcggc 540
 atttctaagt ctgaaaacca agaagaactc cgtcaagcct taaaacttgc cttccgatat 600
 gacagccgtg tcttggttga gcaaggagtg aatgcccggt aaattgaggt tggcctcttg 660


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ggtaactacg atgtcaagag cacgctacct ggagaagttg tcaaggacgt tgccttttat 720
gactacgatg ccaagtatat tgataacaag attactatgg atattcctac caaaatcagt 780
gatgatgtgg tggctgtcat gcgtcaaaat gcagaaacag ccttccgtgc cattgggtggc 840
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ctcaatacca tgccagggtt caccagtggt tctatgtacc cactactttg ggacaatatg 960
gggatcagct acccagaact aatcgagcgt ttggttgacc ttgccaagga aagttttgac 1020
aagcgccaag cgcatttgat ataa 1044

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<210> 94

<211> 347

<212> PRT

<213> Streptococcus pneumoniae

<400> 94

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Met Lys Gln Thr Ile Ile Leu Leu Tyr Gly Gly Arg Ser Ala Glu Arg
  1             5             10             15

Glu Val Ser Val Leu Ser Ala Glu Ser Val Met Arg Ala Val Asn Tyr
             20             25             30

Asp Arg Phe Thr Val Lys Thr Phe Phe Ile Ser Gln Ser Gly Asp Phe
             35             40             45

Ile Lys Thr Gln Glu Phe Ser His Ala Pro Gly Gln Glu Asp Arg Leu
  50             55             60

Met Thr Asn Glu Thr Ile Asp Trp Asp Lys Lys Val Ala Pro Ser Ala
  65             70             75             80

Ile Tyr Glu Glu Gly Ala Val Val Phe Pro Val Leu His Gly Pro Met
             85             90             95

Gly Glu Asp Gly Ser Val Gln Gly Phe Leu Glu Val Leu Lys Met Pro
 100             105             110

Tyr Val Gly Cys Asn Ile Leu Ser Ser Ser Leu Ala Met Asp Lys Ile
 115             120             125

Thr Thr Lys Arg Val Leu Glu Ser Ala Gly Ile Ala Gln Val Pro Tyr
 130             135             140

Val Ala Ile Val Glu Gly Asp Asp Val Thr Ala Lys Ile Ala Glu Val
 145             150             155             160

Glu Glu Lys Leu Ala Tyr Pro Val Phe Ile Lys Pro Ser Asn Met Gly
 165             170             175

Ser Ser Val Gly Ile Ser Lys Ser Glu Asn Gln Glu Glu Leu Arg Gln
 180             185             190

Ala Leu Lys Leu Ala Phe Arg Tyr Asp Ser Arg Val Leu Val Glu Gln
 195             200             205

Gly Val Asn Ala Arg Glu Ile Glu Val Gly Leu Leu Gly Asn Tyr Asp
 210             215             220

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Val Lys Ser Thr Leu Pro Gly Glu Val Val Lys Asp Val Ala Phe Tyr
 225 230 235 240
 Asp Tyr Asp Ala Lys Tyr Ile Asp Asn Lys Ile Thr Met Asp Ile Pro
 245 250 255
 Thr Lys Ile Ser Asp Asp Val Val Ala Val Met Arg Gln Asn Ala Glu
 260 265 270
 Thr Ala Phe Arg Ala Ile Gly Gly Leu Gly Leu Ser Arg Cys Asp Phe
 275 280 285
 Phe Tyr Thr Asp Lys Gly Glu Ile Phe Leu Asn Glu Leu Asn Thr Met
 290 295 300
 Pro Gly Phe Thr Gln Trp Ser Met Tyr Pro Leu Leu Trp Asp Asn Met
 305 310 315 320
 Gly Ile Ser Tyr Pro Glu Leu Ile Glu Arg Leu Val Asp Leu Ala Lys
 325 330 335
 Glu Ser Phe Asp Lys Arg Glu Ala His Leu Ile
 340 345

<210> 95
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 95
 gcggcgcccc atatgaaaca aacgattatt cttttatatg

40

<210> 96
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 96
 gcgcggatcc tatcaaagtc gcttcgcgc

29

<210> 97
 <211> 12
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 97

Glu Glu Gly Ala Val Val Phe Pro Val Leu His Gly
 1 5 10

<210> 98

<211> 22

<212> PRT

<213> Streptococcus pneumoniae

<400> 98

Thr Lys Arg Val Leu Glu Ser Ala Gly Ile Ala Gln Val Pro Tyr Val
 1 5 10 15

Ala Ile Val Glu Gly Asp
 20

<210> 99

<211> 9

<212> PRT

<213> Streptococcus pneumoniae

<400> 99

Asp Ser Arg Val Leu Val Glu Gln Gly
 1 5

<210> 100

<211> 1353

<212> DNA

<213> Streptococcus pneumoniae

<400> 100

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gcgccgaaag	tctttgtagg	acgtgacaca	cgtatttcag	gggaaatgtt	ggaatcggcc	180
ttggtggcag	gtctcctttc	agtagggatt	cacgtataca	aacttgggtg	ccttgcaaca	240
ccagcagtag	cttacttggt	tgaaactgaa	ggagcaagtg	cgggtgtcat	gatttctgct	300
agccacaacc	cagcccttga	taacggaatc	aagttctttg	gcggtgatgg	cttcaaacta	360
gatgatgaaa	aagaagcaga	aattgaagcc	ttgctagatg	ctgaggaaga	cactcttcct	420
cgtccaagtg	cagaaggctt	aggaattttg	gtagattatc	cagaaggctt	gcgtaagtat	480
gaaggatacc	ttgtttcaac	tggaaactcct	cttgatggaa	tgaaggttgc	ccttgataca	540
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acggttatcg	gggaaacacc	agacggtctt	aacatcaacc	ttaatgttgg	ttcaacacat	660
ccagaagccc	ttcaagaagt	ggtcaaagaa	agtgggtcag	ctattgggtt	ggcctttgat	720
ggagacagtg	accgcttgat	tgctgttgat	gagaatggtg	acatcggtga	tggtgacaag	780
attatgtaca	tcatcgga	atacctttct	gaaaaaggac	aattgggtca	aaatacaatt	840
gtgacaactg	ttatgtctaa	ccttgggtttc	cacaaggcct	tgaatcgcca	aggtattaac	900
aaggcagtta	ctgcagttgg	tgaccgctac	gttggtgaag	aaatgagaaa	atcaggctac	960
aaccttgggtg	gtgaacagtc	tggtcacgtt	atcttgatgg	attacaatac	cacaggtgat	1020
ggtcaattat	cagcagttca	attgactaaa	atcatgaagg	aaactggtaa	gagcttatca	1080
gagttggcgg	cagaagtaac	gatttatcca	caaaaattag	ttaatattccg	agtggaaaac	1140
gtcatgaagg	aaaaggccat	ggaagtgcc	gctatcaagg	ccatcatcga	gaagatggaa	1200
gaagaaatgg	cggggaacgg	cgtatcctt	gttcgtccaa	gtggaacaga	accctcttg	1260
cgtgttatgg	cagaagcgcc	tacaacagaa	gaagtaaact	actatgttga	taccatcaca	1320
gatgtagttc	gtgctgaaat	tgggattgac	taa			1353

<210> 101

<211> 450

<212> PRT

<213> Streptococcus pneumoniae

<400> 101

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Met Gly Lys Tyr Phe Gly Thr Asp Gly Val Arg Gly Glu Ala Asn Leu
  1           5           10           15

Glu Leu Thr Pro Glu Leu Ala Phe Lys Leu Gly Arg Phe Gly Gly Tyr
      20           25           30

Val Leu Ser Gln His Glu Thr Glu Ala Pro Lys Val Phe Val Gly Arg
      35           40           45

Asp Thr Arg Ile Ser Gly Glu Met Leu Glu Ser Ala Leu Val Ala Gly
      50           55           60

Leu Leu Ser Val Gly Ile His Val Tyr Lys Leu Gly Val Leu Ala Thr
      65           70           75           80

Pro Ala Val Ala Tyr Leu Val Glu Thr Glu Gly Ala Ser Ala Gly Val
      85           90           95

Met Ile Ser Ala Ser His Asn Pro Ala Leu Asp Asn Gly Ile Lys Phe
      100          105          110

Phe Gly Gly Asp Gly Phe Lys Leu Asp Asp Glu Lys Glu Ala Glu Ile
      115          120          125

Glu Ala Leu Leu Asp Ala Glu Glu Asp Thr Leu Pro Arg Pro Ser Ala
      130          135          140

Glu Gly Leu Gly Ile Leu Val Asp Tyr Pro Glu Gly Leu Arg Lys Tyr
      145          150          155          160

Glu Gly Tyr Leu Val Ser Thr Gly Thr Pro Leu Asp Gly Met Lys Val
      165          170          175

Ala Leu Asp Thr Ala Asn Gly Ala Ala Ser Thr Ser Ala Arg Gln Ile
      180          185          190

Phe Ala Asp Leu Gly Ala Gln Leu Thr Val Ile Gly Glu Thr Pro Asp
      195          200          205

Gly Leu Asn Ile Asn Leu Asn Val Gly Ser Thr His Pro Glu Ala Leu
      210          215          220

Gln Glu Val Val Lys Glu Ser Gly Ser Ala Ile Gly Leu Ala Phe Asp
      225          230          235          240

Gly Asp Ser Asp Arg Leu Ile Ala Val Asp Glu Asn Gly Asp Ile Val
      245          250          255

Asp Gly Asp Lys Ile Met Tyr Ile Ile Gly Lys Tyr Leu Ser Glu Lys
      260          265          270

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Gly Gln Leu Ala Gln Asn Thr Ile Val Thr Thr Val Met Ser Asn Leu
 275 280 285
 Gly Phe His Lys Ala Leu Asn Arg Glu Gly Ile Asn Lys Ala Val Thr
 290 295 300
 Ala Val Gly Asp Arg Tyr Val Val Glu Glu Met Arg Lys Ser Gly Tyr
 305 310 315 320
 Asn Leu Gly Gly Glu Gln Ser Gly His Val Ile Leu Met Asp Tyr Asn
 325 330 335
 Thr Thr Gly Asp Gly Gln Leu Ser Ala Val Gln Leu Thr Lys Ile Met
 340 345 350
 Lys Glu Thr Gly Lys Ser Leu Ser Glu Leu Ala Ala Glu Val Thr Ile
 355 360 365
 Tyr Pro Gln Lys Leu Val Asn Ile Arg Val Glu Asn Val Met Lys Glu
 370 375 380
 Lys Ala Met Glu Val Pro Ala Ile Lys Ala Ile Ile Glu Lys Met Glu
 385 390 395 400
 Glu Glu Met Ala Gly Asn Gly Arg Ile Leu Val Arg Pro Ser Gly Thr
 405 410 415
 Glu Pro Leu Leu Arg Val Met Ala Glu Ala Pro Thr Thr Glu Val
 420 425 430
 Asn Tyr Tyr Val Asp Thr Ile Thr Asp Val Val Arg Ala Glu Ile Gly
 435 440 445
 Ile Asp
 450

<210> 102

<211> 1353

<212> DNA

<213> *Streptococcus pneumoniae*

<400> 102

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gcgccgaaag tctttgtagg acgtgacaca cgtatttcag gggaaatgct ggaatcggcc 180
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tcagcagtag cttacttggt tgaaactgaa ggagcaagtg ccggtgtcat gatttctgct 300
agccacaacc cagcccttga taacggaatc aagttccttg gcggtgatgg cttcaaacta 360
gatgatgaaa aagaagcaga aattgaagcc ttgctagatg ctgaggaaga cactcttcct 420
cggccaagtg cagaagggtt aggaatcttg gtagattatc cagaaggctt gcgtaagtat 480
gaaggatacc ttgtttcaac tggaaactcct cttgatggaa tgaaggttgc cttggataca 540
gctaattggag cagcttctac cagtgcccggt caaatctttg cagaccttgg tgcccaattg 600
acggttatcg gggaaacacc agacggtcct aacatcaacc ttaatgttgg ttcaacacat 660
ccagaagccc ttcaagaagt ggtcaaagaa agtgggtcag ctattgggtt ggcctttgat 720
ggagacagtg accgcttgat tgctgttgat gagaatggtg acatcgttga tgggtgacaag 780
attatgtaca tcatcggaaa atacctttct gaaaaaggac aattggctca aaatacaatt 840
gtgacaactg ttatgtctaa ccttgggttc cacaaggcct tgaatcgca aggtattaac 900

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aaggcagtta ctgcagttgg tgaccgctac gttgttgaag aaatgagaaa atcaggctac 960
aaccttggtg gtgaacagtc tggtcacgtt atcttgatgg attacaatac cacagggtgat 1020
ggtcaattat cagcagttca attgactaaa atcatgaagg aaactggtaa gagcttatca 1080
gagttggcgg cagaagtaac gatttatcca caaaaattag ttaatatccg agtggaaaac 1140
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gaagaaatgg cggggaacgg ccgtatcctt gttcgtccaa gtggaacaga acccctcttg 1260
cgtgttatgg cagaagcgcc tacaacagaa gaagtaaact actatgttga taccatcaca 1320
gatgtagttc gtgctgaaat tgggattgac taa 1353

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<210> 103

<211> 450

<212> PRT

<213> Streptococcus pneumoniae

<400> 103

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Met Gly Lys Tyr Phe Gly Thr Asp Gly Val Arg Gly Glu Ala Asn Leu
 1             5             10             15

Glu Leu Thr Pro Glu Leu Ala Phe Lys Leu Gly Arg Phe Gly Gly Tyr
      20             25             30

Val Leu Ser Gln His Glu Thr Glu Ala Pro Lys Val Phe Val Gly Arg
      35             40             45

Asp Thr Arg Ile Ser Gly Glu Met Leu Glu Ser Ala Leu Val Ala Gly
      50             55             60

Leu Leu Ser Val Gly Ile His Val Tyr Lys Leu Gly Val Leu Ala Thr
      65             70             75             80

Ser Ala Val Ala Tyr Leu Val Glu Thr Glu Gly Ala Ser Ala Gly Val
      85             90             95

Met Ile Ser Ala Ser His Asn Pro Ala Leu Asp Asn Gly Ile Lys Phe
      100            105            110

Phe Gly Gly Asp Gly Phe Lys Leu Asp Asp Glu Lys Glu Ala Glu Ile
      115            120            125

Glu Ala Leu Leu Asp Ala Glu Glu Asp Thr Leu Pro Arg Pro Ser Ala
      130            135            140

Glu Gly Leu Gly Ile Leu Val Asp Tyr Pro Glu Gly Leu Arg Lys Tyr
      145            150            155            160

Glu Gly Tyr Leu Val Ser Thr Gly Thr Pro Leu Asp Gly Met Lys Val
      165            170            175

Ala Leu Asp Thr Ala Asn Gly Ala Ala Ser Thr Ser Ala Arg Gln Ile
      180            185            190

Phe Ala Asp Leu Gly Ala Gln Leu Thr Val Ile Gly Glu Thr Pro Asp
      195            200            205

Gly Leu Asn Ile Asn Leu Asn Val Gly Ser Thr His Pro Glu Ala Leu
      210            215            220

```

Gln Glu Val Val Lys Glu Ser Gly Ser Ala Ile Gly Leu Ala Phe Asp
 225 230 235 240
 Gly Asp Ser Asp Arg Leu Ile Ala Val Asp Glu Asn Gly Asp Ile Val
 245 250 255
 Asp Gly Asp Lys Ile Met Tyr Ile Ile Gly Lys Tyr Leu Ser Glu Lys
 260 265 270
 Gly Gln Leu Ala Gln Asn Thr Ile Val Thr Thr Val Met Ser Asn Leu
 275 280 285
 Gly Phe His Lys Ala Leu Asn Arg Glu Gly Ile Asn Lys Ala Val Thr
 290 295 300
 Ala Val Gly Asp Arg Tyr Val Val Glu Glu Met Arg Lys Ser Gly Tyr
 305 310 315 320
 Asn Leu Gly Gly Glu Gln Ser Gly His Val Ile Leu Met Asp Tyr Asn
 325 330 335
 Thr Thr Gly Asp Gly Gln Leu Ser Ala Val Gln Leu Thr Lys Ile Met
 340 345 350
 Lys Glu Thr Gly Lys Ser Leu Ser Glu Leu Ala Ala Glu Val Thr Ile
 355 360 365
 Tyr Pro Gln Lys Leu Val Asn Ile Arg Val Glu Asn Val Met Lys Glu
 370 375 380
 Lys Ala Met Glu Val Pro Ala Ile Lys Ala Ile Ile Glu Lys Met Glu
 385 390 395 400
 Glu Glu Met Ala Gly Asn Gly Arg Ile Leu Val Arg Pro Ser Gly Thr
 405 410 415
 Glu Pro Leu Leu Arg Val Met Ala Glu Ala Pro Thr Thr Glu Glu Val
 420 425 430
 Asn Tyr Tyr Val Asp Thr Ile Thr Asp Val Val Arg Ala Glu Ile Gly
 435 440 445
 Ile Asp
 450

<210> 104

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 104

gcggcgcccc atatgggtaa atattttggg actg

<210> 105
 <211> 30
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 105
 gcgcgggatcc gtcaatccca atttcagcac 30

<210> 106
 <211> 34
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 106
 gcggcgcccc atatgaaata ttttgggact gatg 34

<210> 107
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 107
 gcggcgcccc atatgtttgg gactgatgga gtc 33

<210> 108
 <211> 31
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 108
 gcggcgcccc atatgactga tggagtccgt g 31

<210> 109
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 109
 gcggcggccc atatgggagt ccgtggagaa g 31

 <210> 110
 <211> 31
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 110
 gcggcggccc atatgctgg agaagctaac c 31

 <210> 111
 <211> 32
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 111
 gcgcggatcc tgtgatgga tcaacatagt ag 32

 <210> 112
 <211> 31
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 112
 gcgcggatcc tacatctgtg atggtatcaa c 31

 <210> 113 /
 <211> 30
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 113
 gcgcggatcc acgaactaca tctgtgatgg 30

<210> 114
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 114
 gcgcggatcc ttcagcacga actacatctg 30

<210> 115
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 115
 gcgcggatcc cccaatttca gcacgaacta c 31

<210> 116
 <211> 32
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 116
 Glu Ser Ala Leu Val Ala Gly Leu Leu Ser Val Gly Ile His Val Tyr
 1 5 10 15
 Lys Leu Gly Val Leu Ala Thr Pro Ala Val Ala Tyr Leu Val Glu Thr
 20 25 30

<210> 117
 <211> 8
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 117
 Leu Ser Ala Val Gln Leu Thr Lys
 1 5

<210> 118
 <211> 22
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 118

Leu Ser Glu Leu Ala Ala Glu Val Thr Ile Tyr Pro Gln Lys Leu Val
 1 5 10 15

Asn Ile Arg Val Glu Asn
 20

<210> 119

<211> 1353

<212> DNA

<213> Streptococcus pneumoniae

<400> 119

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atgaaagtaa tagatcaatt taaaaataag aaagtccttg ttttaggttt ggccaagtct 60
ggtgaatctg cagctcgttt gttggacaag ctaggtgcc aagaagggat caaggtcatt 120
aaacctttcg aggacaatcc agctgccc aaagttgctgg aagaagggat caaggtcatt 180
acaggtagggc atcctttgga actcttgga gaagagtttg cccttatggg gaaaaatcca 240
ggtatcccct acaacaatcc catgattgaa aaggctttgg ccaaggggaat tccagtcttg 300
actgaggtgg aattggctta ttgatttca gaagcaccga ttattgggtat cacaggatcg 360
aacggtaaga caaccacaac gactatgatt ggggaagttt tgactgctgc tggccaacat 420
ggtcttttat cagggaaatat cggctatcca gctagtcagg ttgctcaaat agcatcagat 480
aaggacacgc ttgttatgga actttcttct ttccaactca tgggtgttca agaattccat 540
ccagagattg cggttattac caacctcatg ccaactcata tcgactacca tgggtcattt 600
tcggaatatg tagcagccaa gtggaatatc cagaacaaga tgacagcagc tgatttcctt 660
gtcttgaact ttaatcaaga cttggcaaaa gacttgactt ccaagacaga agccactgtt 720
gtaccatttt caacacttga aaagggtgat ggagcttatc tggaagatgg tcaactctac 780
ttccgtgggtg aagtagtcat ggcagcgaat gaaatcgggtg ttccaggtag ccacaatgtg 840
gaaaatgccc ttgcgactat tgctgtagcc aagcttcgtg atgtggacaa tcaaaccatc 900
aaggaaaactc tttcagcctt cgggtggtgc aaacaccgtc tccagtttgt ggatgacatc 960
aagggtgtta aattctataa cgacagtaaa tcaactaata tcttggctac tcaaaaagcc 1020
ttgtcaggat ttgacaacag caaggctcgtc ttgattgcag gtgggttggg ccggtggcaat 1080
gagtttgacg aattggtgcc agacattact ggactcaaga agatgggtcat cctgggtcaa 1140
tctgcagaac gtgtcaaacg ggcagcagac aaggctggtg tcgcttatgt ggaggcgaca 1200
gatattgcag atgcgacccg caaggcctat gagcttgcca ctcaaggaga tgtggttctt 1260
cttagtcctg ccaatgctag ctgggatatg tatgctaact ttgaagtacg tggcgacctc 1320
tttatcgaca cagtagcgga gttaaaagaa taa 1353

```

<210> 120

<211> 450

<212> PRT

<213> Streptococcus pneumoniae

<400> 120

Met Lys Val Ile Asp Gln Phe Lys Asn Lys Lys Val Leu Val Leu Gly
 1 5 10 15

Leu Ala Lys Ser Gly Glu Ser Ala Ala Arg Leu Leu Asp Lys Leu Gly
 20 25 30

Ala Ile Val Thr Val Asn Asp Gly Lys Pro Phe Glu Asp Asn Pro Ala
 35 40 45

Ala Gln Ser Leu Leu Glu Glu Gly Ile Lys Val Ile Thr Gly Gly His
 50 55 60

Pro	Leu	Glu	Leu	Leu	Asp	Glu	Glu	Phe	Ala	Leu	Met	Val	Lys	Asn	Pro	65	70	75	80
Gly	Ile	Pro	Tyr	Asn	Asn	Pro	Met	Ile	Glu	Lys	Ala	Leu	Ala	Lys	Gly	85	90	95	
Ile	Pro	Val	Leu	Thr	Glu	Val	Glu	Leu	Ala	Tyr	Leu	Ile	Ser	Glu	Ala	100	105	110	
Pro	Ile	Ile	Gly	Ile	Thr	Gly	Ser	Asn	Gly	Lys	Thr	Thr	Thr	Thr	Thr	115	120	125	
Met	Ile	Gly	Glu	Val	Leu	Thr	Ala	Ala	Gly	Gln	His	Gly	Leu	Leu	Ser	130	135	140	
Gly	Asn	Ile	Gly	Tyr	Pro	Ala	Ser	Gln	Val	Ala	Gln	Ile	Ala	Ser	Asp	145	150	155	160
Lys	Asp	Thr	Leu	Val	Met	Glu	Leu	Ser	Ser	Phe	Gln	Leu	Met	Gly	Val	165	170	175	
Gln	Glu	Phe	His	Pro	Glu	Ile	Ala	Val	Ile	Thr	Asn	Leu	Met	Pro	Thr	180	185	190	
His	Ile	Asp	Tyr	His	Gly	Ser	Phe	Ser	Glu	Tyr	Val	Ala	Ala	Lys	Trp	195	200	205	
Asn	Ile	Gln	Asn	Lys	Met	Thr	Ala	Ala	Asp	Phe	Leu	Val	Leu	Asn	Phe	210	215	220	
Asn	Gln	Asp	Leu	Ala	Lys	Asp	Leu	Thr	Ser	Lys	Thr	Glu	Ala	Thr	Val	225	230	235	240
Val	Pro	Phe	Ser	Thr	Leu	Glu	Lys	Val	Asp	Gly	Ala	Tyr	Leu	Glu	Asp	245	250	255	
Gly	Gln	Leu	Tyr	Phe	Arg	Gly	Glu	Val	Val	Met	Ala	Ala	Asn	Glu	Ile	260	265	270	
Gly	Val	Pro	Gly	Ser	His	Asn	Val	Glu	Asn	Ala	Leu	Ala	Thr	Ile	Ala	275	280	285	
Val	Ala	Lys	Leu	Arg	Asp	Val	Asp	Asn	Gln	Thr	Ile	Lys	Glu	Thr	Leu	290	295	300	
Ser	Ala	Phe	Gly	Gly	Val	Lys	His	Arg	Leu	Gln	Phe	Val	Asp	Asp	Ile	305	310	315	320
Lys	Gly	Val	Lys	Phe	Tyr	Asn	Asp	Ser	Lys	Ser	Thr	Asn	Ile	Leu	Ala	325	330	335	
Thr	Gln	Lys	Ala	Leu	Ser	Gly	Phe	Asp	Asn	Ser	Lys	Val	Val	Leu	Ile	340	345	350	
Ala	Gly	Gly	Leu	Asp	Arg	Gly	Asn	Glu	Phe	Asp	Glu	Leu	Val	Pro	Asp	355	360	365	

Ile Thr Gly Leu Lys Lys Met Val Ile Leu Gly Gln Ser Ala Glu Arg
370 375 380

Val Lys Arg Ala Ala Asp Lys Ala Gly Val Ala Tyr Val Glu Ala Thr
385 390 395 400

Asp Ile Ala Asp Ala Thr Arg Lys Ala Tyr Glu Leu Ala Thr Gln Gly
405 410 415

Asp Val Val Leu Leu Ser Pro Ala Asn Ala Ser Trp Asp Met Tyr Ala
420 425 430

Asn Phe Glu Val Arg Gly Asp Leu Phe Ile Asp Thr Val Ala Glu Leu
435 440 445

Lys Glu
450

<210> 121

<211> 1353

<212> DNA

<213> Streptococcus pneumoniae

<400> 121

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atgaaagtaa tagatcaatt taaaaataag aaagtccttg ttttaggttt ggccaagtct 60
ggtgaatctg cagctcgttt gttggacaag ctaggtgcca ttgtgacagt aaatgatggg 120
aagcctttcg aggacaatcc agctgcccaa agtttgctgg aagaagggat caaggtcatt 180
acagggtggcc atccttttga actcttgat gaagagtttg cccttatggt gaaaaatcca 240
ggtatcccct acaacaatcc catgattgaa aaggcttttg ccaaggaat tccagtcttg 300
actgagggtg aattggctta tttgatttca gaagcaccga ttattggtat cacaggatcg 360
aacggtgaaga caaccacaac gactatgatt ggggaagttt tgactgctgc tgggcaacat 420
ggtcttttat caggggaatat cggctatcct gccagtcagg ttgctcaaat agcatcagat 480
aaggatacgc ttgttatgga actttcttct ttccaactca tgggtgttca agaattccat 540
ccagagattg cggttattac caacctcatg ccaactcata tcgactacca tgggtcattt 600
tcggaatatg tagcagccaa gtggaatatc cagaacaaga tgacagcagc tgatttcctt 660
gtcttgaact ttaatcaaga cttggcaaaa gacttgactt ccaagacaga agccactgtt 720
gtaccatttt caacacttga aaaggttgat ggagcttata tagaagatgg tcaactctac 780
ttccgtgggtg aagtagtcat ggcagcgaat gaaatcgggtg ttccaggtag ccacaatgtg 840
gaaaatgccc ttgcgactat tgctgtagcc aagcttcgtg gtgtggacaa tcaaaccatc 900
aaggaaactc tttcagcctt cgggtggtgc aaacaccgtc tccagtttgt ggatgacatc 960
aagggtgtta aattctataa cgacagtaaa tcaactaata tcttggtac tcaaaaagcc 1020
ttgtcaggat ttgacaacag caaggtcgtc ttgattgcag gtggtttgga ccgtggcaat 1080
gagtttgacg aattggtgcc agatattact ggactcaaga agatggtcat cctgggtcaa 1140
tctgcagaac gtgtcaaacg ggcagcagac aaggctgggtg tcgcttatgt ggaggcgaca 1200
gatattgcag atgcgacccg caaggcatat gagcttgcca ctcaaggaga tgtggttctt 1260
cttagtcctg ccaatgccag ctgggatatg tatgctaact ttgaagtacg tggcgacctc 1320
ttatcgaca cagtagcggg gttaaaagaa taa 1353

```

<210> 122

<211> 450

<212> PRT

<213> Streptococcus pneumoniae

<400> 122

Met Lys Val Ile Asp Gln Phe Lys Asn Lys Lys Val Leu Val Leu Gly
1 5 10 15

Leu	Ala	Lys	Ser	Gly	Glu	Ser	Ala	Ala	Arg	Leu	Leu	Asp	Lys	Leu	Gly
			20				25						30		
Ala	Ile	Val	Thr	Val	Asn	Asp	Gly	Lys	Pro	Phe	Glu	Asp	Asn	Pro	Ala
			35				40				45				
Ala	Gln	Ser	Leu	Leu	Glu	Glu	Gly	Ile	Lys	Val	Ile	Thr	Gly	Gly	His
			50				55				60				
Pro	Leu	Glu	Leu	Leu	Asp	Glu	Glu	Phe	Ala	Leu	Met	Val	Lys	Asn	Pro
65				70						75				80	
Gly	Ile	Pro	Tyr	Asn	Asn	Pro	Met	Ile	Glu	Lys	Ala	Leu	Ala	Lys	Gly
			85						90				95		
Ile	Pro	Val	Leu	Thr	Glu	Val	Glu	Leu	Ala	Tyr	Leu	Ile	Ser	Glu	Ala
			100				105						110		
Pro	Ile	Ile	Gly	Ile	Thr	Gly	Ser	Asn	Gly	Lys	Thr	Thr	Thr	Thr	Thr
			115				120				125				
Met	Ile	Gly	Glu	Val	Leu	Thr	Ala	Ala	Gly	Gln	His	Gly	Leu	Leu	Ser
130				135						140					
Gly	Asn	Ile	Gly	Tyr	Pro	Ala	Ser	Gln	Val	Ala	Gln	Ile	Ala	Ser	Asp
145				150						155			160		
Lys	Asp	Thr	Leu	Val	Met	Glu	Leu	Ser	Ser	Phe	Gln	Leu	Met	Gly	Val
			165						170				175		
Gln	Glu	Phe	His	Pro	Glu	Ile	Ala	Val	Ile	Thr	Asn	Leu	Met	Pro	Thr
			180				185						190		
His	Ile	Asp	Tyr	His	Gly	Ser	Phe	Ser	Glu	Tyr	Val	Ala	Ala	Lys	Trp
			195				200				205				
Asn	Ile	Gln	Asn	Lys	Met	Thr	Ala	Ala	Asp	Phe	Leu	Val	Leu	Asn	Phe
210				215						220					
Asn	Gln	Asp	Leu	Ala	Lys	Asp	Leu	Thr	Ser	Lys	Thr	Glu	Ala	Thr	Val
225				230						235			240		
Val	Pro	Phe	Ser	Thr	Leu	Glu	Lys	Val	Asp	Gly	Ala	Tyr	Leu	Glu	Asp
			245						250				255		
Gly	Gln	Leu	Tyr	Phe	Arg	Gly	Glu	Val	Val	Met	Ala	Ala	Asn	Glu	Ile
			260			265						270			
Gly	Val	Pro	Gly	Ser	His	Asn	Val	Glu	Asn	Ala	Leu	Ala	Thr	Ile	Ala
			275				280				285				
Val	Ala	Lys	Leu	Arg	Gly	Val	Asp	Asn	Gln	Thr	Ile	Lys	Glu	Thr	Leu
			290	295						300					
Ser	Ala	Phe	Gly	Gly	Val	Lys	His	Arg	Leu	Gln	Phe	Val	Asp	Asp	Ile
305				310						315			320		

[illegible]

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<210> 123
<211> 42
<212> DNA
<213> Artificial Sequence
```

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 123
gcggcgcccc atatgaaagt aatagatcaa tttaaaaata ag 42

```
<210> 124
<211> 32
<212> DNA
<213> Artificial Sequence
```

<220>
<223> Description of Artificial Sequence: Synthetic primer

```
<400> 124
gcgcggatcc ttcttttaac tccgctactg tg                               32
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```
<210> 125
<211> 36
<212> DNA
<213> Artificial Sequence
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<220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 125
 gcggcggccc atatgaaagt ccttgtttta ggtttg 36

 <210> 126
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 126
 gcggcggccc atatgaaaaa taagaaagtc cttgttttag 40

 <210> 127
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 127
 gcggcggccc atatggtttt aggtttggcc aag 33

 <210> 128
 <211> 39
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 128
 gcggcggccc atatggtaat agatcaattt aaaaataag 39

 <210> 129
 <211> 37
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 129
gcggcggccc atatggatca atttaaaaat aagaaag 37

<210> 130
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 130
gcggcggccc atatgaataa gaaagtcctt gttttag 37

<210> 131
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 131
gcgcggatcc gaggtcgcca cgtacttc 28

<210> 132
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 132
gcgcggatcc gataaagagg tcgccacgta c 31

<210> 133
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 133
gcgcggatcc tgtgtcgata aagaggtcgc 30

<210> 134
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 134
 gcgcggatcc cgctactgtg tcgataaaga g 31

<210> 135
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 135
 gcgcggatcc ttttaactcc gctactgtgt c 31

<210> 136
 <211> 10
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 136
 Asn Lys Lys Val Leu Val Leu Gly Leu Ala
 1 5 10

<210> 137
 <211> 10
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 137
 Gln Gly Asp Val Val Leu Leu Ser Pro Ala
 1 5 10

<210> 138
 <211> 8
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 138
 Ser Lys Val Val Leu Ile Ala Gly
 1 5

<210> 139
 <211> 1974
 <212> DNA
 <213> *Staphylococcus aureus*

```
<400> 139
atggcctaaag aaacatttta tataacaacc ccaatatact atcctagtgg gaatttacat 60
ataggacatg catattctac agtggctgga gatgttattg caagatataa gagaatgcaa 120
ggatatgatg ttcgctatgt gactggaacg gatgaacacg gtcaaaaaat tcaagaaaaa 180
gctcaaaaag ctggtaagac agaaattgaa tatttggtatg agatgattgc tgggaattaaa 240
caattgtggg ctaagcttga aatttcaaat gatgatttta tcagaacaac tgaagaacgt 300
cataaacatg tcgttgagca agtggttgaa cgtttattaa agcaagggtga tatctattta 360
ggtgaatatg aagggttggt tttctgttccg gatgaaacat actatacaga gtcacaatta 420
gtagaccac aatacgaaaa cggtaaaatt attggtggca aaagtccaga ttctggacac 480
gaagttgaac tagttaaaga agaaagtatt ttctttaata ttagtaataa tacagaccgt 540
ttattagagt tctatgacca aaatccagat ttatacaac caccatcaag aaaaaatgaa 600
atgattaaca acttcattaa accaggactt gctgatttag ctgtttctcg tacatcattt 660
aactgggggtg tcaatgttcc gtctaattcca aaacatgttg tttatgtttg gattgatgag 720
ttagttaact atatttcagc attaggctat ttatcagatg atgagtcact atttaacaaa 780
tactggccag cagatattca tttaatggct aaggaaattg tgcgattcca ctcaattatt 840
tggcctatgt tattgatggc attagactta ccgttaccta aaaaagtctt tgcacatggg 900
tggattttga tgaaagatgg aaaaatgagt aaatctaaag gtaatgtcgt agacccta 960
attttaattg atcgctatgg tttagatgct acacgttatt atctaagcg tgaattacca 1020
tttggttcag tatggcgtatt tacacctgaa gcatttggtg agcgtacaaa tttcgatcta 1080
gcaaatagact taggtaactt agtaaacgt acgatttcta tggttaataa gtactttgat 1140
ggcgaattac cagcgtatca aggtccactt catgaattag atgaagaaat ggaagctatg 1200
gctttagaaa cagtgaagag ctacactgaa agcatggaaa gtttgcaatt ttctgtggca 1260
ttatctacgg tatggaagtt tattagtaga acgaataagt atattgacga aacaacgcct 1320
tgggtattag ctaaggacga tagccaaaaa gatatgttag gcaatgtaat ggctcactta 1380
gttgaaaata ttcgttatgc agctgtatta ttacgtccat tcttaacaca tgcgccgaaa 1440
gagatttttg aacaattgaa cattaacaat cctcaattta tgggaatttag tagtttagag 1500
caatatggtg tgcttaatga gtcaattatg gttactgggc aacctaaacc tattttccca 1560
agattggata gcgaagcgga aattgcatat atcaaagaat caatgcaacc gcctgctact 1620
aaagaggaaa aagaagagat tcctagcaaa cctcaaattg atattaaaga ctttgataaa 1680
gttgaaatta aggcagcaac gattattgat gctgaacatg ttaagaagtc agataagctt 1740
ttaaaaaattc aagtagactt agattctgaa caagacaaa ttgtatcagg aattgccaaa 1800
ttctatacac cagatgatat tattggtaaa aaagtagcag ttgttactaa cctgaaacca 1860
gctaaattaa tgggacaaaa atctgaaggt atgatattat ctgctgaaaa agatgggtgta 1920
ttaaccttag taagtttacc aagtgcgaatt ccaaattggtg cagtgattaa ataa 1974
```

<210> 140
 <211> 657
 <212> PRT
 <213> *Staphylococcus aureus*

```
<400> 140
Met Ala Lys Glu Thr Phe Tyr Ile Thr Thr Pro Ile Tyr Tyr Pro Ser
  1              5              10              15

Gly Asn Leu His Ile Gly His Ala Tyr Ser Thr Val Ala Gly Asp Val
      20              25              30

Ile Ala Arg Tyr Lys Arg Met Gln Gly Tyr Asp Val Arg Tyr Leu Thr
      35              40              45

Gly Thr Asp Glu His Gly Gln Lys Ile Gln Glu Lys Ala Gln Lys Ala
      50              55              60
```

Gly	Lys	Thr	Glu	Ile	Glu	Tyr	Leu	Asp	Glu	Met	Ile	Ala	Gly	Ile	Lys	65	70	75	80
Gln	Leu	Trp	Ala	Lys	Leu	Glu	Ile	Ser	Asn	Asp	Asp	Phe	Ile	Arg	Thr	85	90	95	
Thr	Glu	Glu	Arg	His	Lys	His	Val	Val	Glu	Gln	Val	Phe	Glu	Arg	Leu	100	105	110	
Leu	Lys	Gln	Gly	Asp	Ile	Tyr	Leu	Gly	Glu	Tyr	Glu	Gly	Trp	Tyr	Ser	115	120	125	
Val	Pro	Asp	Glu	Thr	Tyr	Tyr	Thr	Glu	Ser	Gln	Leu	Val	Asp	Pro	Gln	130	135	140	
Tyr	Glu	Asn	Gly	Lys	Ile	Ile	Gly	Gly	Lys	Ser	Pro	Asp	Ser	Gly	His	145	150	155	160
Glu	Val	Glu	Leu	Val	Lys	Glu	Glu	Ser	Tyr	Phe	Phe	Asn	Ile	Ser	Lys	165	170	175	
Tyr	Thr	Asp	Arg	Leu	Leu	Glu	Phe	Tyr	Asp	Gln	Asn	Pro	Asp	Phe	Ile	180	185	190	
Gln	Pro	Pro	Ser	Arg	Lys	Asn	Glu	Met	Ile	Asn	Asn	Phe	Ile	Lys	Pro	195	200	205	
Gly	Leu	Ala	Asp	Leu	Ala	Val	Ser	Arg	Thr	Ser	Phe	Asn	Trp	Gly	Val	210	215	220	
His	Val	Pro	Ser	Asn	Pro	Lys	His	Val	Val	Tyr	Val	Trp	Ile	Asp	Ala	225	230	235	240
Leu	Val	Asn	Tyr	Ile	Ser	Ala	Leu	Gly	Tyr	Leu	Ser	Asp	Asp	Glu	Ser	245	250	255	
Leu	Phe	Asn	Lys	Tyr	Trp	Pro	Ala	Asp	Ile	His	Leu	Met	Ala	Lys	Glu	260	265	270	
Ile	Val	Arg	Phe	His	Ser	Ile	Ile	Trp	Pro	Ile	Leu	Leu	Met	Ala	Leu	275	280	285	
Asp	Leu	Pro	Leu	Pro	Lys	Lys	Val	Phe	Ala	His	Gly	Trp	Ile	Leu	Met	290	295	300	
Lys	Asp	Gly	Lys	Met	Ser	Lys	Ser	Lys	Gly	Asn	Val	Val	Asp	Pro	Asn	305	310	315	320
Ile	Leu	Ile	Asp	Arg	Tyr	Gly	Leu	Asp	Ala	Thr	Arg	Tyr	Tyr	Leu	Met	325	330	335	
Arg	Glu	Leu	Pro	Phe	Gly	Ser	Asp	Gly	Val	Phe	Thr	Pro	Glu	Ala	Phe	340	345	350	
Val	Glu	Arg	Thr	Asn	Phe	Asp	Leu	Ala	Asn	Asp	Leu	Gly	Asn	Leu	Val	355	360	365	

Asn Arg Thr Ile Ser Met Val Asn Lys Tyr Phe Asp Gly Glu Leu Pro
 370 375 380
 Ala Tyr Gln Gly Pro Leu His Glu Leu Asp Glu Glu Met Glu Ala Met
 385 390 395 400
 Ala Leu Glu Thr Val Lys Ser Tyr Thr Glu Ser Met Glu Ser Leu Gln
 405 410 415
 Phe Ser Val Ala Leu Ser Thr Val Trp Lys Phe Ile Ser Arg Thr Asn
 420 425 430
 Lys Tyr Ile Asp Glu Thr Thr Pro Trp Val Leu Ala Lys Asp Asp Ser
 435 440 445
 Gln Lys Asp Met Leu Gly Asn Val Met Ala His Leu Val Glu Asn Ile
 450 455 460
 Arg Tyr Ala Ala Val Leu Leu Arg Pro Phe Leu Thr His Ala Pro Lys
 465 470 475 480
 Glu Ile Phe Glu Gln Leu Asn Ile Asn Asn Pro Gln Phe Met Glu Phe
 485 490 495
 Ser Ser Leu Glu Gln Tyr Gly Val Leu Asn Glu Ser Ile Met Val Thr
 500 505 510
 Gly Gln Pro Lys Pro Ile Phe Pro Arg Leu Asp Ser Glu Ala Glu Ile
 515 520 525
 Ala Tyr Ile Lys Glu Ser Met Gln Pro Pro Ala Thr Lys Glu Glu Lys
 530 535 540
 Glu Glu Ile Pro Ser Lys Pro Gln Ile Asp Ile Lys Asp Phe Asp Lys
 545 550 555 560
 Val Glu Ile Lys Ala Ala Thr Ile Ile Asp Ala Glu His Val Lys Lys
 565 570 575
 Ser Asp Lys Leu Leu Lys Ile Gln Val Asp Leu Asp Ser Glu Gln Arg
 580 585 590
 Gln Ile Val Ser Gly Ile Ala Lys Phe Tyr Thr Pro Asp Asp Ile Ile
 595 600 605
 Gly Lys Lys Val Ala Val Val Thr Asn Leu Lys Pro Ala Lys Leu Met
 610 615 620
 Gly Gln Lys Ser Glu Gly Met Ile Leu Ser Ala Glu Lys Asp Gly Val
 625 630 635 640
 Leu Thr Leu Val Ser Leu Pro Ser Ala Ile Pro Asn Gly Ala Val Ile
 645 650 655
 Lys

<210> 141
 <211> 1974
 <212> DNA
 <213> *Staphylococcus aureus*

<400> 141
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 ggatatgatg ttcgctatgt gactggaacg gatgaacacg gtcaaaaaat tcaagaaaaa 180
 gctcaaaaag ctggtaagac agaaattgaa tatttggatg agatgattgc tgggaattaaa 240
 caattgtggg ctaagcttga aattttcaaat gatgatttta tcagaacaac tgaagaacgt 300
 cataaacatg tcgttgagca agtgtttgaa cgtttattaa agcaagggtga tatctattta 360
 ggtgaatatg aagggttggtg ttctgttccg gatgaaacat actatacaga gtcacaatta 420
 gtagaccac aatacgaaaa cggtaaaatt attggtggca aaagtccaga ttctggacac 480
 gaagtgaac tagttaaaga agaaagtatt ttctttaata ttagtaataa tacagaccgt 540
 ttattagagt tctatgacca aaatccagat ttatacaaac caccatcaag aaaaaatgaa 600
 atgattaaca acttcattaa accaggactt gctgatttag ctgtttctcg tacatcattt 660
 aactggggtg tccctgttcc gtctaattca aaacatgttg tttatgtttg gattgatgag 720
 ttagttaact atatttcagc attaggctat ttatcagatg atgagtcact atttaacaaa 780
 tactggccag cagatattca tttaattggt aaggaaaattg tgcgattcca ctcaattatt 840
 tggcctatgt tattgatggc attagactta ccgttaccta aaaaagtctt tgcacatggt 900
 tggattttga tgaaagatgg aaaaatgagt aaatctaaag gtaatgtcgt agacccta 960
 attttaattg atcgctatgg tttagatgct acacgttatt atctaattgcg tgaattacca 1020
 tttggttcag atggcgtatt tacacctgaa gcatttggtg agcgtacaaa ttctgatcta 1080
 gcaaatgact taggtaactt agtaaaccgt acgatttcta tgggtaataa gtactttgat 1140
 ggcgaattac cagcgtatca aggtccactt catgaattag atgaagaaat ggaagctatg 1200
 gctttagaaa cagtgaagaa ctacactgaa agcatggaaa gtttgcaatt ttctgtggca 1260
 ttatctacgg tatggaagtt tattagtaga acgaataagt atattgacga aacaaccctt 1320
 tgggtattag ctaaggacga tagccaaaaa gatatgttag gcaatgtaat ggctcactta 1380
 gttgaaaata ttcgttatgc agctgtatta ttacgtccat tcttaacaca tgcgccgaaa 1440
 gagatttttg aacaattgaa cattaacaat cctcaattta tgggaatttag tagtttagag 1500
 caatatgggtg tgcttaatga gtcaattatg gttactgggc aacctaaacc tattttccca 1560
 agattggata gcgaagcgga aattgcatat atcaaagaat caatgcaacc gcctgctact 1620
 aaagaggaaa aagaagagat tcctagcaaa cctcaaattg atattaaaga ctttgataaa 1680
 gttgaaatta aggcagcaac gattattgat gctgaacatg ttaagaagtc agataagctt 1740
 ttaaaaaattc aagtagactt agattctgaa caaagacaaa ttgtatcagg aattgccaaa 1800
 ttctatacac cagatgatat tattggtaaa aaagtagcag ttgttactaa cctgaaaccg 1860
 gctaaattaa tgggacaaaa atctgaaggt atgatattat ctgctgaaaa agatgggtga 1920
 ttaaccttag taagtttacc aagtgcattt ccaaattggtg cagtgattaa ataa 1974

<210> 142
 <211> 657
 <212> PRT
 <213> *Staphylococcus aureus*

<400> 142
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 20 25 30
 Ile Ala Arg Tyr Lys Arg Met Gln Gly Tyr Asp Val Arg Tyr Leu Thr
 35 40 45
 Gly Thr Asp Glu His Gly Gln Lys Ile Gln Glu Lys Ala Gln Lys Ala
 50 55 60

Gly	Lys	Thr	Glu	Ile	Glu	Tyr	Leu	Asp	Glu	Met	Ile	Ala	Gly	Ile	Lys	65	70	75	80
Gln	Leu	Trp	Ala	Lys	Leu	Glu	Ile	Ser	Asn	Asp	Asp	Phe	Ile	Arg	Thr	85	90	95	
Thr	Glu	Glu	Arg	His	Lys	His	Val	Val	Glu	Gln	Val	Phe	Glu	Arg	Leu	100	105	110	
Leu	Lys	Gln	Gly	Asp	Ile	Tyr	Leu	Gly	Glu	Tyr	Glu	Gly	Trp	Tyr	Ser	115	120	125	
Val	Pro	Asp	Glu	Thr	Tyr	Tyr	Thr	Glu	Ser	Gln	Leu	Val	Asp	Pro	Gln	130	135	140	
Tyr	Glu	Asn	Gly	Lys	Ile	Ile	Gly	Gly	Lys	Ser	Pro	Asp	Ser	Gly	His	145	150	155	160
Glu	Val	Glu	Leu	Val	Lys	Glu	Glu	Ser	Tyr	Phe	Phe	Asn	Ile	Ser	Lys	165	170	175	
Tyr	Thr	Asp	Arg	Leu	Leu	Glu	Phe	Tyr	Asp	Gln	Asn	Pro	Asp	Phe	Ile	180	185	190	
Gln	Pro	Pro	Ser	Arg	Lys	Asn	Glu	Met	Ile	Asn	Asn	Phe	Ile	Lys	Pro	195	200	205	
Gly	Leu	Ala	Asp	Leu	Ala	Val	Ser	Arg	Thr	Ser	Phe	Asn	Trp	Gly	Val	210	215	220	
Pro	Val	Pro	Ser	Asn	Pro	Lys	His	Val	Val	Tyr	Val	Trp	Ile	Asp	Ala	225	230	235	240
Leu	Val	Asn	Tyr	Ile	Ser	Ala	Leu	Gly	Tyr	Leu	Ser	Asp	Asp	Glu	Ser	245	250	255	
Leu	Phe	Asn	Lys	Tyr	Trp	Pro	Ala	Asp	Ile	His	Leu	Met	Ala	Lys	Glu	260	265	270	
Ile	Val	Arg	Phe	His	Ser	Ile	Ile	Trp	Pro	Ile	Leu	Leu	Met	Ala	Leu	275	280	285	
Asp	Leu	Pro	Leu	Pro	Lys	Lys	Val	Phe	Ala	His	Gly	Trp	Ile	Leu	Met	290	295	300	
Lys	Asp	Gly	Lys	Met	Ser	Lys	Ser	Lys	Gly	Asn	Val	Val	Asp	Pro	Asn	305	310	315	320
Ile	Leu	Ile	Asp	Arg	Tyr	Gly	Leu	Asp	Ala	Thr	Arg	Tyr	Tyr	Leu	Met	325	330	335	
Arg	Glu	Leu	Pro	Phe	Gly	Ser	Asp	Gly	Val	Phe	Thr	Pro	Glu	Ala	Phe	340	345	350	
Val	Glu	Arg	Thr	Asn	Phe	Asp	Leu	Ala	Asn	Asp	Leu	Gly	Asn	Leu	Val	355	360	365	

Asn Arg Thr Ile Ser Met Val Asn Lys Tyr Phe Asp Gly Glu Leu Pro
 370 375 380
 Ala Tyr Gln Gly Pro Leu His Glu Leu Asp Glu Glu Met Glu Ala Met
 385 390 395 400
 Ala Leu Glu Thr Val Lys Ser Tyr Thr Glu Ser Met Glu Ser Leu Gln
 405 410 415
 Phe Ser Val Ala Leu Ser Thr Val Trp Lys Phe Ile Ser Arg Thr Asn
 420 425 430
 Lys Tyr Ile Asp Glu Thr Thr Pro Trp Val Leu Ala Lys Asp Asp Ser
 435 440 445
 Gln Lys Asp Met Leu Gly Asn Val Met Ala His Leu Val Glu Asn Ile
 450 455 460
 Arg Tyr Ala Ala Val Leu Leu Arg Pro Phe Leu Thr His Ala Pro Lys
 465 470 475 480
 Glu Ile Phe Glu Gln Leu Asn Ile Asn Asn Pro Gln Phe Met Glu Phe
 485 490 495
 Ser Ser Leu Glu Gln Tyr Gly Val Leu Asn Glu Ser Ile Met Val Thr
 500 505 510
 Gly Gln Pro Lys Pro Ile Phe Pro Arg Leu Asp Ser Glu Ala Glu Ile
 515 520 525
 Ala Tyr Ile Lys Glu Ser Met Gln Pro Pro Ala Thr Lys Glu Glu Lys
 530 535 540
 Glu Glu Ile Pro Ser Lys Pro Gln Ile Asp Ile Lys Asp Phe Asp Lys
 545 550 555 560
 Val Glu Ile Lys Ala Ala Thr Ile Ile Asp Ala Glu His Val Lys Lys
 565 570 575
 Ser Asp Lys Leu Leu Lys Ile Gln Val Asp Leu Asp Ser Glu Gln Arg
 580 585 590
 Gln Ile Val Ser Gly Ile Ala Lys Phe Tyr Thr Pro Asp Asp Ile Ile
 595 600 605
 Gly Lys Lys Val Ala Val Val Thr Asn Leu Lys Pro Ala Lys Leu Met
 610 615 620
 Gly Gln Lys Ser Glu Gly Met Ile Leu Ser Ala Glu Lys Asp Gly Val
 625 630 635 640
 Leu Thr Leu Val Ser Leu Pro Ser Ala Ile Pro Asn Gly Ala Val Ile
 645 650 655
 Lys

<210> 143
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 143
 gcggcgcccc atatgagtac attagaacaa acaatag

37

<210> 144
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 144
 gcgcggatcc ttaatagcct ttcagcgcg c

31

<210> 145
 <211> 30
 <212> PRT
 <213> Staphylococcus aureus

<400> 145
 Trp Gly Val His Val Pro Ser Asn Pro Lys His Val Val Tyr Val Trp
 1 5 10 15
 Ile Asp Ala Leu Val Asn Tyr Ile Ser Ala Leu Gly Tyr Leu
 20 25 30

<210> 146
 <211> 17
 <212> PRT
 <213> Staphylococcus aureus

<400> 146
 Asp Gly Val Leu Thr Leu Val Ser Leu Pro Ser Ala Ile Pro Asn Gly
 1 5 10 15

Ala

<210> 147
 <211> 22
 <212> PRT
 <213> Staphylococcus aureus

<400> 147

His Lys His Val Val Glu Gln Val Phe Glu Arg Leu Leu Lys Gln Gly
 1 5 10 15

Asp Ile Tyr Leu Gly Glu
 20

<210> 148

<211> 1263

<212> DNA

<213> Staphylococcus aureus

<400> 148

atgacgaatg tattaattga agatttaaaa tggagaggtc ttatttatca acaaactgat 60
 gaacaaggta ttgaagattt attaaataaa gaacaagtga cggtatactg cgggtgccgat 120
 ccaacggcag atagttttaca tattgggtcac ttactacat tcttaacatt aagacgtttt 180
 caagaacatg gacatcggtcc tatcggtttta attggcgggtg gtacagggtat gattgggtgat 240
 ccatcaggta aatcagaaga acgtgtgcta caaacagaag aacaagtaga taaaaatatac 300
 gaaggtatta gtaagcaaatt gcacaatat tttgaatttg gaacagacca tgggtgcagtg 360
 cttgttaata atagagactg gttaggacaa atctcattaa ttagttttttt acgtgactat 420
 ggtaaacacg tccggcggttaa ttacatgtta ggtaaagatt caatccaaag tcgttttagaa 480
 catgggtattt catatacaga attcacatac acgatttttac aagctattga tttcgggtcat 540
 ttgaatagag aattgaattg taagattcaa gtagggtggat cagatcaatg gggtaatatc 600
 acaagtggta ttgaattaat gcgtcgtatg tatgggtcaaa cagacgcata cggtttaact 660
 attccgcttg taactaaatc agatggtaag aaatttggtg agtctgagtc aggtgctggt 720
 tgggttagatg ctgaaaaaac aagtccttat gaattttatc aattctggat taatcaatca 780
 gacgaagatg taattaaatt cttaaaatac tttactttct taggaaaaga agaaattgat 840
 cgcttagaac aatctaaaaa tgaagcaccg catttacgtg aagctcaaaa aacattagct 900
 gaagaagtaa ctaaaatttat tcatgggtgaa gatgcattaa atgatgcaat ccgtatttca 960
 caagcattat ttagtggtga tttaaaatca ttatcagcga aagaattaaa agatggattt 1020
 aaagatgtgc ctcaagtgc attatcaaat gacacaacaa atatcggtga agtccttatt 1080
 gaaacaggca tttctccttc taaacgacaa gcacgtgaag atgttaacaa tgggtgcgatt 1140
 tatattaatg gtgagagaca acaagatgtt aattatgctt tagcaccaga agataaaaatt 1200
 gatggcgaat ttacgattat tcgtcgcggt aagaaaaaat acttcatggt taactatcaa 1260
 taa 1263

<210> 149

<211> 420

<212> PRT

<213> Staphylococcus aureus

<400> 149

Met Thr Asn Val Leu Ile Glu Asp Leu Lys Trp Arg Gly Leu Ile Tyr
 1 5 10 15

Gln Gln Thr Asp Glu Gln Gly Ile Glu Asp Leu Leu Asn Lys Glu Gln
 20 25 30

Val Thr Leu Tyr Cys Gly Ala Asp Pro Thr Ala Asp Ser Leu His Ile
 35 40 45

Gly His Leu Leu Pro Phe Leu Thr Leu Arg Arg Phe Gln Glu His Gly
 50 55 60

His Arg Pro Ile Val Leu Ile Gly Gly Gly Thr Gly Met Ile Gly Asp
 65 70 75 80

Pro	Ser	Gly	Lys	Ser	Glu	Glu	Arg	Val	Leu	Gln	Thr	Glu	Glu	Gln	Val	85	90	95
Asp	Lys	Asn	Ile	Glu	Gly	Ile	Ser	Lys	Gln	Met	His	Asn	Ile	Phe	Glu	100	105	110
Phe	Gly	Thr	Asp	His	Gly	Ala	Val	Leu	Val	Asn	Asn	Arg	Asp	Trp	Leu	115	120	125
Gly	Gln	Ile	Ser	Leu	Ile	Ser	Phe	Leu	Arg	Asp	Tyr	Gly	Lys	His	Val	130	135	140
Gly	Val	Asn	Tyr	Met	Leu	Gly	Lys	Asp	Ser	Ile	Gln	Ser	Arg	Leu	Glu	145	150	155
His	Gly	Ile	Ser	Tyr	Thr	Glu	Phe	Thr	Tyr	Thr	Ile	Leu	Gln	Ala	Ile	165	170	175
Asp	Phe	Gly	His	Leu	Asn	Arg	Glu	Leu	Asn	Cys	Lys	Ile	Gln	Val	Gly	180	185	190
Gly	Ser	Asp	Gln	Trp	Gly	Asn	Ile	Thr	Ser	Gly	Ile	Glu	Leu	Met	Arg	195	200	205
Arg	Met	Tyr	Gly	Gln	Thr	Asp	Ala	Tyr	Gly	Leu	Thr	Ile	Pro	Leu	Val	210	215	220
Thr	Lys	Ser	Asp	Gly	Lys	Lys	Phe	Gly	Lys	Ser	Glu	Ser	Gly	Ala	Val	225	230	235
Trp	Leu	Asp	Ala	Glu	Lys	Thr	Ser	Pro	Tyr	Glu	Phe	Tyr	Gln	Phe	Trp	245	250	255
Ile	Asn	Gln	Ser	Asp	Glu	Asp	Val	Ile	Lys	Phe	Leu	Lys	Tyr	Phe	Thr	260	265	270
Phe	Leu	Gly	Lys	Glu	Glu	Ile	Asp	Arg	Leu	Glu	Gln	Ser	Lys	Asn	Glu	275	280	285
Ala	Pro	His	Leu	Arg	Glu	Ala	Gln	Lys	Thr	Leu	Ala	Glu	Glu	Val	Thr	290	295	300
Lys	Phe	Ile	His	Gly	Glu	Asp	Ala	Leu	Asn	Asp	Ala	Ile	Arg	Ile	Ser	305	310	315
Gln	Ala	Leu	Phe	Ser	Gly	Asp	Leu	Lys	Ser	Leu	Ser	Ala	Lys	Glu	Leu	325	330	335
Lys	Asp	Gly	Phe	Lys	Asp	Val	Pro	Gln	Val	Thr	Leu	Ser	Asn	Asp	Thr	340	345	350
Thr	Asn	Ile	Val	Glu	Val	Leu	Ile	Glu	Thr	Gly	Ile	Ser	Pro	Ser	Lys	355	360	365
Arg	Gln	Ala	Arg	Glu	Asp	Val	Asn	Asn	Gly	Ala	Ile	Tyr	Ile	Asn	Gly	370	375	380

Glu Arg Gln Gln Asp Val Asn Tyr Ala Leu Ala Pro Glu Asp Lys Ile
385 390 395 400

Asp Gly Glu Phe Thr Ile Ile Arg Arg Gly Lys Lys Lys Tyr Phe Met
405 410 415

Val Asn Tyr Gln
420

<210> 150
<211> 1263
<212> DNA
<213> Staphylococcus aureus

<400> 150
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gaacaaggta ttgaagattt attaaataaa gaacaagtga cgttatactg cggtgccgat 120
ccaacggcag atagttttaca tattgggtcac ttactacctt tcttaacatt aagacgtttt 180
caagaacatg gacatcgtcc tatcgtttta attggcgggtg gtactggtat gattgggtgat 240
ccatcaggta aatcagaaga acgtgtgcta caaacagaag aacaagtaga taaaaatatac 300
gaaggattta gtaagcaaat gcacaatatt tttgaatttg gaacagacca tgggtgcagtg 360
cttgtaata atagagactg gttaggacaa atctcattaa ttagtttttt acgtgactat 420
ggtaaacacg tcggcggttaa ttacatgtta ggtaaagatt caatccaaag tcgttttagaa 480
catggatttt catatacaga attcacatac acgatttttac aagctattga ttctcggtcat 540
ttgaatagag aattgaattg tgagattcaa gtaggtggat cagatcaatg gggtaatatc 600
acaagtggta ttgaattaat gcgtcgtatg tatgggtcaaa cagacgcata cggtttaact 660
attccgcttg taactaaatc agatggtaag aaattttggta agtctgagtc aggtgctgtt 720
tgggttagatg ctgaaaaaac aagtccttat gaatttttat aattctggat taatcaatca 780
gacgaagatg taattaaatt cttaaaatac tttactttct taggaaaaga agaaattgat 840
cgcttagaac aatctaaaaa tgaagcaccg catttacgtg aagctcaaaa aacattagct 900
gaagaagtaa ctaaatttat tcatgggtgaa gatgcattaa atgatgcaat ccgtatttca 960
caagcattat ttagtggtga tttaaaatca ttatcagcga aagaattaaa agatgggttt 1020
aaagatgtgc ctcaagtgc attatcaaat gacacaacaa atatcggtga agtccttatt 1080
gaaacaggca tttctccttc taaacgacaa gcacgtgaag atgttaacaa tgggtgcgatt 1140
tatattaatg gtgagagaca acaagatgtt aattatgctt tagcaccaga agataaaaatt 1200
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taa 1263

<210> 151
<211> 420
<212> PRT
<213> Staphylococcus aureus

<400> 151
Met Thr Asn Val Leu Ile Glu Asp Leu Lys Trp Arg Gly Leu Ile Tyr
1 5 10 15
Gln Gln Thr Asp Glu Gln Gly Ile Glu Asp Leu Leu Asn Lys Glu Gln
20 25 30
Val Thr Leu Tyr Cys Gly Ala Asp Pro Thr Ala Asp Ser Leu His Ile
35 40 45
Gly His Leu Leu Pro Phe Leu Thr Leu Arg Arg Phe Gln Glu His Gly
50 55 60

His	Arg	Pro	Ile	Val	Leu	Ile	Gly	Gly	Gly	Thr	Gly	Met	Ile	Gly	Asp	65	70	75	80
Pro	Ser	Gly	Lys	Ser	Glu	Glu	Arg	Val	Leu	Gln	Thr	Glu	Glu	Gln	Val	85	90	95	
Asp	Lys	Asn	Ile	Glu	Gly	Ile	Ser	Lys	Gln	Met	His	Asn	Ile	Phe	Glu	100	105	110	
Phe	Gly	Thr	Asp	His	Gly	Ala	Val	Leu	Val	Asn	Asn	Arg	Asp	Trp	Leu	115	120	125	
Gly	Gln	Ile	Ser	Leu	Ile	Ser	Phe	Leu	Arg	Asp	Tyr	Gly	Lys	His	Val	130	135	140	
Gly	Val	Asn	Tyr	Met	Leu	Gly	Lys	Asp	Ser	Ile	Gln	Ser	Arg	Leu	Glu	145	150	155	160
His	Gly	Ile	Ser	Tyr	Thr	Glu	Phe	Thr	Tyr	Thr	Ile	Leu	Gln	Ala	Ile	165	170	175	
Asp	Phe	Gly	His	Leu	Asn	Arg	Glu	Leu	Asn	Cys	Glu	Ile	Gln	Val	Gly	180	185	190	
Gly	Ser	Asp	Gln	Trp	Gly	Asn	Ile	Thr	Ser	Gly	Ile	Glu	Leu	Met	Arg	195	200	205	
Arg	Met	Tyr	Gly	Gln	Thr	Asp	Ala	Tyr	Gly	Leu	Thr	Ile	Pro	Leu	Val	210	215	220	
Thr	Lys	Ser	Asp	Gly	Lys	Lys	Phe	Gly	Lys	Ser	Glu	Ser	Gly	Ala	Val	225	230	235	240
Trp	Leu	Asp	Ala	Glu	Lys	Thr	Ser	Pro	Tyr	Glu	Phe	Tyr	Gln	Phe	Trp	245	250	255	
Ile	Asn	Gln	Ser	Asp	Glu	Asp	Val	Ile	Lys	Phe	Leu	Lys	Tyr	Phe	Thr	260	265	270	
Phe	Leu	Gly	Lys	Glu	Glu	Ile	Asp	Arg	Leu	Glu	Gln	Ser	Lys	Asn	Glu	275	280	285	
Ala	Pro	His	Leu	Arg	Glu	Ala	Gln	Lys	Thr	Leu	Ala	Glu	Glu	Val	Thr	290	295	300	
Lys	Phe	Ile	His	Gly	Glu	Asp	Ala	Leu	Asn	Asp	Ala	Ile	Arg	Ile	Ser	305	310	315	320
Gln	Ala	Leu	Phe	Ser	Gly	Asp	Leu	Lys	Ser	Leu	Ser	Ala	Lys	Glu	Leu	325	330	335	
Lys	Asp	Gly	Phe	Lys	Asp	Val	Pro	Gln	Val	Thr	Leu	Ser	Asn	Asp	Thr	340	345	350	
Thr	Asn	Ile	Val	Glu	Val	Leu	Ile	Glu	Thr	Gly	Ile	Ser	Pro	Ser	Lys	355	360	365	

Arg Gln Ala Arg Glu Asp Val Asn Asn Gly Ala Ile Tyr Ile Asn Gly
 370 375 380

Glu Arg Gln Gln Asp Val Asn Tyr Ala Leu Ala Pro Glu Asp Lys Ile
 385 390 395 400

Asp Gly Glu Phe Thr Ile Ile Arg Arg Gly Lys Lys Lys Tyr Phe Met
 405 410 415

Val Asn Tyr Gln
 420

<210> 152

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 152

gcggcggccc atatgggcac gaccaaacac ag

32

<210> 153

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 153

gcgcggatcc ttagatatga tcaaaaatga tctcag

36

<210> 154

<211> 16

<212> PRT

<213> Staphylococcus aureus

<400> 154

Ala Asp Ser Leu His Ile Gly His Leu Leu Pro Phe Leu Thr Leu Arg
 1 5 10 15

<210> 155

<211> 11

<212> PRT

<213> Staphylococcus aureus

<400> 155

Lys Glu Gln Val Thr Leu Tyr Cys Gly Ala Asp
 1 5 10

<210> 156
 <211> 9
 <212> PRT
 <213> Staphylococcus aureus

<400> 156
 Ile Val Glu Val Leu Ile Glu Thr Gly
 1 5

<210> 157
 <211> 1263
 <212> DNA
 <213> Staphylococcus aureus

<400> 157
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 tacattgaaa atcaattaga tgaattaatg acattttata attataaaga aataagaaca 120
 ccaatttttg aaagtacaga tctttttgca agagggtgtg gtgattcaac cgatgtcgta 180
 caaaaagaaa tgtatacatt taaagataaa ggcgatagaa gtattacatt aagacctgag 240
 ggaacagctg cagttgtgcg ttcatatatt gaacataaaa tgcaaggtaa tccaaaccaa 300
 ccaattaaac tttattacaa tggaccgatg tttagatatg aacgtaagca aaaaggacgc 360
 tatcgtaaat ttaatcaatt tgggtgtagaa gctattgggtg ctgaaaatcc tagcgtagat 420
 gcagaagtat tagctatggg tatgcatatt tatcaatcat ttggattaaa acattttaaag 480
 cttgttatta atagtgtagg ggatatggcg tctcgaaaag aatataacga agcgtttagtg 540
 aaacactttg aaccagtaat tcatgaattt tggttcagatt gtcaatcacg tttgcataca 600
 aatccgatgc gaatttttga ttgtaaagta gaccgtgata aagaagcgat taagactgca 660
 cctagaatca ctgatttctt aaatgaggaa tctaaggcat attatgaaca agtaaaagct 720
 tatttagatg atttaggtat tccatatatt gaagatccta acttagttcg tggattggat 780
 tattatacac atacagcatt tgaattaatg atggataacc ctaactatga tgggtgccatt 840
 acaacgcttt gtgggtgggtg ccgtttataat gggtttattag aattgctaga tgggtccaagt 900
 gaaacaggta ttgggttttg gctaagtata gaacgattat tgcttgcaact tgaagaagaa 960
 ggtatcgaat tagatatattg agaaaactta gatttattca ttgtttacaat ggggtgatcaa 1020
 gcagatcgat atgctgtgaa gctattaaat catttgagac ataatggat taaagcagat 1080
 aaagactatt tacagcgtaa aatttaaagga caaatgaaac aagcagaccg tttagggtgcc 1140
 aagtttaciaa tcggttattgg tgatcaagaa ttagaaaata ataaaatcga tgttataaat 1200
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 tag 1263

<210> 158
 <211> 420
 <212> PRT
 <213> Staphylococcus aureus

<400> 158
 Met Ile Lys Ile Pro Arg Gly Thr Gln Asp Ile Leu Pro Glu Asp Ser
 1 5 10 15
 Lys Lys Trp Arg Tyr Ile Glu Asn Gln Leu Asp Glu Leu Met Thr Phe
 20 25 30
 Tyr Asn Tyr Lys Glu Ile Arg Thr Pro Ile Phe Glu Ser Thr Asp Leu
 35 40 45
 Phe Ala Arg Gly Val Gly Asp Ser Thr Asp Val Val Gln Lys Glu Met
 50 55 60

Tyr	Thr	Phe	Lys	Asp	Lys	Gly	Asp	Arg	Ser	Ile	Thr	Leu	Arg	Pro	Glu	65	70	75	80
Gly	Thr	Ala	Ala	Val	Val	Arg	Ser	Tyr	Ile	Glu	His	Lys	Met	Gln	Gly	85	90	95	
Asn	Pro	Asn	Gln	Pro	Ile	Lys	Leu	Tyr	Tyr	Asn	Gly	Pro	Met	Phe	Arg	100	105	110	
Tyr	Glu	Arg	Lys	Gln	Lys	Gly	Arg	Tyr	Arg	Gln	Phe	Asn	Gln	Phe	Gly	115	120	125	
Val	Glu	Ala	Ile	Gly	Ala	Glu	Asn	Pro	Ser	Val	Asp	Ala	Glu	Val	Leu	130	135	140	
Ala	Met	Val	Met	His	Ile	Tyr	Gln	Ser	Phe	Gly	Leu	Lys	His	Leu	Lys	145	150	155	160
Leu	Val	Ile	Asn	Ser	Val	Gly	Asp	Met	Ala	Ser	Arg	Lys	Glu	Tyr	Asn	165	170	175	
Glu	Ala	Leu	Val	Lys	His	Phe	Glu	Pro	Val	Ile	His	Glu	Phe	Cys	Ser	180	185	190	
Asp	Cys	Gln	Ser	Arg	Leu	His	Thr	Asn	Pro	Met	Arg	Ile	Leu	Asp	Cys	195	200	205	
Lys	Val	Asp	Arg	Asp	Lys	Glu	Ala	Ile	Lys	Thr	Ala	Pro	Arg	Ile	Thr	210	215	220	
Asp	Phe	Leu	Asn	Glu	Glu	Ser	Lys	Ala	Tyr	Tyr	Glu	Gln	Val	Lys	Ala	225	230	235	240
Tyr	Leu	Asp	Asp	Leu	Gly	Ile	Pro	Tyr	Ile	Glu	Asp	Pro	Asn	Leu	Val	245	250	255	
Arg	Gly	Leu	Asp	Tyr	Tyr	Thr	His	Thr	Ala	Phe	Glu	Leu	Met	Met	Asp	260	265	270	
Asn	Pro	Asn	Tyr	Asp	Gly	Ala	Ile	Thr	Thr	Leu	Cys	Gly	Gly	Gly	Arg	275	280	285	
Tyr	Asn	Gly	Leu	Leu	Glu	Leu	Leu	Asp	Gly	Pro	Ser	Glu	Thr	Gly	Ile	290	295	300	
Gly	Phe	Ala	Leu	Ser	Ile	Glu	Arg	Leu	Leu	Leu	Ala	Leu	Glu	Glu	Glu	305	310	315	320
Gly	Ile	Glu	Leu	Asp	Ile	Glu	Glu	Asn	Leu	Asp	Leu	Phe	Ile	Val	Thr	325	330	335	
Met	Gly	Asp	Gln	Ala	Asp	Arg	Tyr	Ala	Val	Lys	Leu	Leu	Asn	His	Leu	340	345	350	
Arg	His	Asn	Gly	Ile	Lys	Ala	Asp	Lys	Asp	Tyr	Leu	Gln	Arg	Lys	Ile	355	360	365	

Lys Gly Gln Met Lys Gln Ala Asp Arg Leu Gly Ala Lys Phe Thr Ile
 370 375 380

Val Ile Gly Asp Gln Glu Leu Glu Asn Asn Lys Ile Asp Val Lys Asn
 385 390 395 400

Met Thr Thr Gly Glu Ser Glu Thr Ile Glu Leu Asp Ala Leu Val Glu
 405 410 415

Tyr Phe Lys Lys
 420

<210> 159

<211> 1263

<212> DNA

<213> Staphylococcus aureus

<400> 159

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ccaatttttg aaagtacaga tctttttgca agagggtgtg gtgattcaac cgatgtcgtg 180
caaaaagaaa tgtatacatt taaagataaa ggcgatagaa gtattacatt aagatctgaa 240
ggaacagctg cagttgtgcg ttcatatatt gaacataaaa tgcaaggtaa tccaaaccaa 300
ccaattaaac tttattacaa tggaccgatg tttagatatg aacgtaagca aaaaggacgc 360
tatcgtcaat ttaatcaatt tgggtgtagaa gctattgggtg ctgaaaatcc tagcgtagat 420
gcagaagtat tagctatggg tatgcatatt tatcaatcat ttggattaaa acattttaaag 480
attgttatta atagtgtagg ggatatggcg tctcgaaaag aatataacga agcgttagt 540
aaacactttg aaccagtaat tcatgaattt tggttcagatt gtcaatcacg tttgcataca 600
aatccgatgc gaatttttga ttgtaaagta gaccgtgata aagaagcgat taagactgca 660
cctagaatca ctgatttctt aaatgaggaa tctaaggcat attatgaaca agtaaaagct 720
tatttagatg atttaggtat tccatatatt gaagatccta acttagttcg tggattggat 780
tattatacac atacagcatt tgaattaatg atggataacc ctaactatga tgggtgccatt 840
acaacgcttt gtggtggtgg ccgtttataat ggtttattag aattgctaga tgggtccaagt 900
gaaacaggta ttggtttttgc gctaagtata gaacgattat tgcttgcaact tgaagaagaa 960
ggtatcgaat tagatattga agaaaacttg gattttattca ttgttacaat ggggtgatcaa 1020
gcagatcgat atgctgtgaa gctattaaat catttgagac ataatgggat taaagcagat 1080
aaagactatt tacagcgtaa aattaaagga caaatgaaac aagcagaccg tttaggtgcc 1140
aagtttacaa tcgttattgg tgatcaagaa ttagaaaata ataaaatcga tgttaaaaat 1200
attacaactg gtgaatctga aacaattgaa ttagacgcat tagtcgaata ttttaagaag 1260
tag 1263

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<210> 160

<211> 420

<212> PRT

<213> Staphylococcus aureus

<400> 160

Met Ile Lys Ile Pro Arg Gly Thr Gln Asp Ile Leu Pro Glu Asp Ser
 1 5 10 15

Lys Lys Trp Arg Tyr Ile Glu Asn Gln Leu Asp Glu Leu Met Thr Phe
 20 25 30

Tyr Asn Tyr Lys Glu Ile Arg Thr Pro Ile Phe Glu Ser Thr Asp Leu
 35 40 45

Phe	Ala	Arg	Gly	Val	Gly	Asp	Ser	Thr	Asp	Val	Val	Gln	Lys	Glu	Met	50	55	60	
Tyr	Thr	Phe	Lys	Asp	Lys	Gly	Asp	Arg	Ser	Ile	Thr	Leu	Arg	Ser	Glu	65	70	75	80
Gly	Thr	Ala	Ala	Val	Val	Arg	Ser	Tyr	Ile	Glu	His	Lys	Met	Gln	Gly	85	90	95	
Asn	Pro	Asn	Gln	Pro	Ile	Lys	Leu	Tyr	Tyr	Asn	Gly	Pro	Met	Phe	Arg	100	105	110	
Tyr	Glu	Arg	Lys	Gln	Lys	Gly	Arg	Tyr	Arg	Gln	Phe	Asn	Gln	Phe	Gly	115	120	125	
Val	Glu	Ala	Ile	Gly	Ala	Glu	Asn	Pro	Ser	Val	Asp	Ala	Glu	Val	Leu	130	135	140	
Ala	Met	Val	Met	His	Ile	Tyr	Gln	Ser	Phe	Gly	Leu	Lys	His	Leu	Lys	145	150	155	160
Ile	Val	Ile	Asn	Ser	Val	Gly	Asp	Met	Ala	Ser	Arg	Lys	Glu	Tyr	Asn	165	170	175	
Glu	Ala	Leu	Val	Lys	His	Phe	Glu	Pro	Val	Ile	His	Glu	Phe	Cys	Ser	180	185	190	
Asp	Cys	Gln	Ser	Arg	Leu	His	Thr	Asn	Pro	Met	Arg	Ile	Leu	Asp	Cys	195	200	205	
Lys	Val	Asp	Arg	Asp	Lys	Glu	Ala	Ile	Lys	Thr	Ala	Pro	Arg	Ile	Thr	210	215	220	
Asp	Phe	Leu	Asn	Glu	Glu	Ser	Lys	Ala	Tyr	Tyr	Glu	Gln	Val	Lys	Ala	225	230	235	240
Tyr	Leu	Asp	Asp	Leu	Gly	Ile	Pro	Tyr	Ile	Glu	Asp	Pro	Asn	Leu	Val	245	250	255	
Arg	Gly	Leu	Asp	Tyr	Tyr	Thr	His	Thr	Ala	Phe	Glu	Leu	Met	Met	Asp	260	265	270	
Asn	Pro	Asn	Tyr	Asp	Gly	Ala	Ile	Thr	Thr	Leu	Cys	Gly	Gly	Gly	Arg	275	280	285	
Tyr	Asn	Gly	Leu	Leu	Glu	Leu	Leu	Asp	Gly	Pro	Ser	Glu	Thr	Gly	Ile	290	295	300	
Gly	Phe	Ala	Leu	Ser	Ile	Glu	Arg	Leu	Leu	Leu	Ala	Leu	Glu	Glu	Glu	305	310	315	320
Gly	Ile	Glu	Leu	Asp	Ile	Glu	Glu	Asn	Leu	Asp	Leu	Phe	Ile	Val	Thr	325	330	335	
Met	Gly	Asp	Gln	Ala	Asp	Arg	Tyr	Ala	Val	Lys	Leu	Leu	Asn	His	Leu	340	345	350	

Arg His Asn Gly Ile Lys Ala Asp Lys Asp Tyr Leu Gln Arg Lys Ile
 355 360 365

Lys Gly Gln Met Lys Gln Ala Asp Arg Leu Gly Ala Lys Phe Thr Ile
 370 375 380

Val Ile Gly Asp Gln Glu Leu Glu Asn Asn Lys Ile Asp Val Lys Asn
 385 390 395 400

Ile Thr Thr Gly Glu Ser Glu Thr Ile Glu Leu Asp Ala Leu Val Glu
 405 410 415

Tyr Phe Lys Lys
 420

<210> 161

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 161

gcggcgggccc atatggctcg tacaacaccc atc

33

<210> 162

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 162

gcgcggatcc ttattattta ccacgggctt caattac

37

<210> 163

<211> 30

<212> PRT

<213> Staphylococcus aureus

<400> 163

Asn Pro Ser Val Asp Ala Glu Val Leu Ala Met Val Met His Ile Tyr
 1 5 10 15

Gln Ser Phe Gly Leu Lys His Leu Lys Leu Val Ile Asn Ser
 20 25 30

<210> 164
 <211> 21
 <212> PRT
 <213> Staphylococcus aureus

<400> 164
 Glu Ala Leu Val Lys His Phe Glu Pro Val Ile His Glu Phe Cys Ser
 1 5 10 15
 Asp Cys Gln Ser Arg
 20

<210> 165
 <211> 11
 <212> PRT
 <213> Staphylococcus aureus

<400> 165
 Thr Ala Ala Val Val Arg Ser Tyr Ile Glu His
 1 5 10

<210> 166
 <211> 633
 <212> DNA
 <213> Staphylococcus aureus

<400> 166
 ttgaggatga ataaaaatgtc agctttttata actttttgagg gcccagaagg ctctggaaaa 60
 acaactgtaa ttaatgaagt ttaccataga ttagtaaaaag attatgatgt cattatgact 120
 agagaaccag gtggtgttcc tactggtgaa gaaatacgtg aaattgtatt agaaggcaat 180
 gatatggaca ttagaactga agcaatgtta tttgctgcat ctagaagaga acatcttgta 240
 ttaaagggtca taccagcttt aaaagaaggt aagggttgtgt tgtgtgatcg ctatatcgat 300
 agttcattag cttatcaagg ttatgctaga gggattggcg ttgaagaagt aagagcatta 360
 aacgaatttg caataaatgg attatatcca gacttgacga tttattttaa tgttagtgtc 420
 gaagtaggtc gcgaaacgtat tattaaaaat tcaagagatc aaaatagatt agatcaagaa 480
 gatttaaaagt ttcacgaaaa agtaattgaa ggttaccaag aaatcattca taatgaatca 540
 caacggttca aaagcgttaa tgcagatcaa cctcttgaaa atgttggtga agacacgtat 600
 caaactatca tcaaatatct agaaaagata tga 633

<210> 167
 <211> 210
 <212> PRT
 <213> Staphylococcus aureus

<400> 167
 Leu Arg Met Asn Lys Met Ser Ala Phe Ile Thr Phe Glu Gly Pro Glu
 1 5 10 15
 Gly Ser Gly Lys Thr Thr Val Ile Asn Glu Val Tyr His Arg Leu Val
 20 25 30
 Lys Asp Tyr Asp Val Ile Met Thr Arg Glu Pro Gly Gly Val Pro Thr
 35 40 45

Gly Glu Glu Ile Arg Lys Ile Val Leu Glu Gly Asn Asp Met Asp Ile
 50 55 60
 Arg Thr Glu Ala Met Leu Phe Ala Ala Ser Arg Arg Glu His Leu Val
 65 70 75 80
 Leu Lys Val Ile Pro Ala Leu Lys Glu Gly Lys Val Val Leu Cys Asp
 85 90 95
 Arg Tyr Ile Asp Ser Ser Leu Ala Tyr Gln Gly Tyr Ala Arg Gly Ile
 100 105 110
 Gly Val Glu Glu Val Arg Ala Leu Asn Glu Phe Ala Ile Asn Gly Leu
 115 120 125
 Tyr Pro Asp Leu Thr Ile Tyr Leu Asn Val Ser Ala Glu Val Gly Arg
 130 135 140
 Glu Arg Ile Ile Lys Asn Ser Arg Asp Gln Asn Arg Leu Asp Gln Glu
 145 150 155 160
 Asp Leu Lys Phe His Glu Lys Val Ile Glu Gly Tyr Gln Glu Ile Ile
 165 170 175
 His Asn Glu Ser Gln Arg Phe Lys Ser Val Asn Ala Asp Gln Pro Leu
 180 185 190
 Glu Asn Val Val Glu Asp Thr Tyr Gln Thr Ile Ile Lys Tyr Leu Glu
 195 200 205
 Lys Ile
 210

<210> 168
 <211> 633
 <212> DNA
 <213> Staphylococcus aureus

<400> 168
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 acaactgtaa ttaatgaagt ttaccataga ttagtaaaag attatgatgt cattatgact 120
 agagaaccag gtggtgttcc tactggtgaa gaaatacgta aaattgtatt agaaggcaat 180
 gatattggaca ttagaactga agcaatgtta tttgctgcat ctagaagaga acatcttgta 240
 ttaaagggtca taccagcttt aaaagaaggt aaggttgtgt tgtgtgatcg ctatatcgat 300
 agttcattag cttatcaagg ttatgctaga gggattggcg ttgaagaagt aagagcatta 360
 aacgaatttg caataaatgg attatatcca gacttgacga tttattttaaa tgtagtgct 420
 gaagtaggtc gcgaacgtat tattaataaat tcaagagatc aaaatagatt agatcaagaa 480
 gatttaaaagt ttcacgaaaa agtaattgaa ggttaccaag aaatcattca taatgaatca 540
 caacggttca aaagcggtta tgcagatcaa cctcttgaaa atggttggtga agacacgtat 600
 caaactatca tcaaataattt agaaaagata tga 633

<210> 169
 <211> 210
 <212> PRT
 <213> Staphylococcus aureus

<400> 169

Leu Arg Met Asn Lys Met Ser Ala Phe Ile Thr Phe Glu Gly Pro Glu
 1 5 10 15

Gly Ser Gly Lys Thr Thr Val Ile Asn Glu Val Tyr His Arg Leu Val
 20 25 30

Lys Asp Tyr Asp Val Ile Met Thr Arg Glu Pro Gly Gly Val Pro Thr
 35 40 45

Gly Glu Glu Ile Arg Lys Ile Val Leu Glu Gly Asn Asp Met Asp Ile
 50 55 60

Arg Thr Glu Ala Met Leu Phe Ala Ala Ser Arg Arg Glu His Leu Val
 65 70 75 80

Leu Lys Val Ile Pro Ala Leu Lys Glu Gly Lys Val Val Leu Cys Asp
 85 90 95

Arg Tyr Ile Asp Ser Ser Leu Ala Tyr Gln Gly Tyr Ala Arg Gly Ile
 100 105 110

Gly Val Glu Glu Val Arg Ala Leu Asn Glu Phe Ala Ile Asn Gly Leu
 115 120 125

Tyr Pro Asp Leu Thr Ile Tyr Leu Asn Val Ser Ala Glu Val Gly Arg
 130 135 140

Glu Arg Ile Ile Lys Asn Ser Arg Asp Gln Asn Arg Leu Asp Gln Glu
 145 150 155 160

Asp Leu Lys Phe His Glu Lys Val Ile Glu Gly Tyr Gln Glu Ile Ile
 165 170 175

His Asn Glu Ser Gln Arg Phe Lys Ser Val Asn Ala Asp Gln Pro Leu
 180 185 190

Glu Asn Val Val Glu Asp Thr Tyr Gln Thr Ile Ile Lys Tyr Leu Glu
 195 200 205

Lys Ile
 210

<210> 170

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 170

gcggcgcccc atatgagtaa ggagttttat ataata

<210> 171
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 171
 ggcgcatcc ttatactatt tcttcattggc tactc 35

<210> 172
 <211> 12
 <212> PRT
 <213> Staphylococcus aureus

<400> 172
 Arg Glu His Leu Val Leu Lys Val Ile Pro Ala Leu
 1 5 10

<210> 173
 <211> 10
 <212> PRT
 <213> Staphylococcus aureus

<400> 173
 Glu Gly Lys Val Val Leu Cys Asp Arg Tyr
 1 5 10

<210> 174
 <211> 15
 <212> PRT
 <213> Staphylococcus aureus

<400> 174
 Ile Asn Glu Val Tyr His Arg Leu Val Lys Asp Tyr Asp Val Ile
 1 5 10 15

<210> 175
 <211> 1077
 <212> DNA
 <213> Staphylococcus aureus

<400> 175
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 gaccagatg ttgtaaatga ttcagataaa ttacgtaaat attctaaaga gcaagctgat 120
 ttacaaaaaa ctgtagatgt ttatcgtaac tataaaagcta aaaaagaaga attagctgat 180
 attgaagaaa tgttaagtga gactgatgat aaagaagaag tagaaatgtt aaaagaggag 240
 agtaattggt ttaaagctga acttccaaat cttgaagaag agcttaaaat attattgatt 300
 ctaaaagatc ctaatgatga caaagacgtt attgtagaaa taagagcagc agcaggtggt 360
 gatgaggctg cgatttttgc tgggtgattta atgcgtatgt attcaaagta tgctgaatca 420
 caaggattca aaactgaaat agtagaagcg tctgaaagtg accatggtgg ttacaaagaa 480
 attagtttct cagtttctgg taatggcgcg tatagttaat tgaaatttga aaatggtgcg 540

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caccgcgttc aacgtgtgcc tgaaacagaa tcaggtggac gtattcatac ttcaacagct 600
acagtggcag ttttaccaga agttgaagat gtagaaattg aaattagaaa tgaagattta 660
aaaatcgaca cgtatcgttc aagtgggtgca ggtggtcagc acgtaaacac aactgactct 720
gcagtacgta ttacccattt accaactggg gtcattgcaa catcttctga gaagtctcaa 780
attcaaaacc gtgaaaaagc aatgaaagtg ttaaaagcac gtttatacga tatgaaagtt 840
caagaagaac aacaaaagta tgcgtcacaa cgtaaatacag cagtcggtac tggtgatcgt 900
tcagaacgta ttcgaactta taattatcca caaagccgtg taacagacca ttgtataggt 960
ctaacgcttc aaaaattagg gcaaattatg gaaggccatt tagaagaaat tatagatgca 1020
ctgactttat cagagcagac agataaattg aaagaactta ataatggtga attataa 1077

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<210> 176

<211> 358

<212> PRT

<213> Staphylococcus aureus

<400> 176

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Val Phe Asp Gln Leu Asp Ile Val Glu Glu Arg Tyr Glu Gln Leu Asn
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Glu Leu Leu Ser Asp Pro Asp Val Val Asn Asp Ser Asp Lys Leu Arg
      20              25              30

Lys Tyr Ser Lys Glu Gln Ala Asp Leu Gln Lys Thr Val Asp Val Tyr
      35              40              45

Arg Asn Tyr Lys Ala Lys Lys Glu Glu Leu Ala Asp Ile Glu Glu Met
      50              55              60

Leu Ser Glu Thr Asp Asp Lys Glu Glu Val Glu Met Leu Lys Glu Glu
      65              70              75              80

Ser Asn Gly Ile Lys Ala Glu Leu Pro Asn Leu Glu Glu Glu Leu Lys
      85              90              95

Ile Leu Leu Ile Pro Lys Asp Pro Asn Asp Asp Lys Asp Val Ile Val
      100             105             110

Glu Ile Arg Ala Ala Ala Gly Gly Asp Glu Ala Ala Ile Phe Ala Gly
      115             120             125

Asp Leu Met Arg Met Tyr Ser Lys Tyr Ala Glu Ser Gln Gly Phe Lys
      130             135             140

Thr Glu Ile Val Glu Ala Ser Glu Ser Asp His Gly Gly Tyr Lys Glu
      145             150             155             160

Ile Ser Phe Ser Val Ser Gly Asn Gly Ala Tyr Ser Lys Leu Lys Phe
      165             170             175

Glu Asn Gly Ala His Arg Val Gln Arg Val Pro Glu Thr Glu Ser Gly
      180             185             190

Gly Arg Ile His Thr Ser Thr Ala Thr Val Ala Val Leu Pro Glu Val
      195             200             205

Glu Asp Val Glu Ile Glu Ile Arg Asn Glu Asp Leu Lys Ile Asp Thr
      210             215             220

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Tyr Arg Ser Ser Gly Ala Gly Gly Gln His Val Asn Thr Thr Asp Ser
 225 230 235 240
 Ala Val Arg Ile Thr His Leu Pro Thr Gly Val Ile Ala Thr Ser Ser
 245 250 255
 Glu Lys Ser Gln Ile Gln Asn Arg Glu Lys Ala Met Lys Val Leu Lys
 260 265 270
 Ala Arg Leu Tyr Asp Met Lys Val Gln Glu Glu Gln Gln Lys Tyr Ala
 275 280 285
 Ser Gln Arg Lys Ser Ala Val Gly Thr Gly Asp Arg Ser Glu Arg Ile
 290 295 300
 Arg Thr Tyr Asn Tyr Pro Gln Ser Arg Val Thr Asp His Arg Ile Gly
 305 310 315 320
 Leu Thr Leu Gln Lys Leu Gly Gln Ile Met Glu Gly His Leu Glu Glu
 325 330 335
 Ile Ile Asp Ala Leu Thr Leu Ser Glu Gln Thr Asp Lys Leu Lys Glu
 340 345 350
 Leu Asn Asn Gly Glu Leu
 355

<210> 177

<211> 1077

<212> DNA

<213> Staphylococcus aureus

<400> 177

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gtgtttgatc aattagatat tgtagaagaa agatacgaac agttaaatga actgttaagt 60
gaccagatg ttgtaaatga ttcagataaa ttacgtaaatt attctaaaga gcaagctgat 120
ttacaaaaaa ctgtagatgt ttatcgtaac tataaagcta aaaaagaaga attagctgat 180
attgaagaaa tgtaaagtga gactgatgat aaagaagaag tagaaatgtt aaaagaggag 240
agtaatggta ttaaagctga acttccaaat cttgaagaag agcttaaaat attattgatt 300
cctaaagatc ctaatgatga caaagacggt attgtagaaa taagagcagc agcaggtggt 360
gatgaggctg cgatttttgc tgggtgattta atgcgtatgt attcaaagta tgctgaatca 420
caaggattca aaactgaaat agtagaagcg tctgaaagtg accatgggtg ttacaaagaa 480
attagtttct cagtttctg taatggcgcg tatagtaaatt tgaaatttga aaatgggtgcg 540
caccgcgttc aacgtgtgcc tgaaacagaa tcaggtggac gtattcatatc ttcaacagct 600
acagtggcag ttttaccaga agttgaagat gtagaaattg aaattagaaa tgaagattta 660
aaaatcgaca cgtatcggtc aagtgggtgca ggtgggtcagc acgtaaacac aactgactct 720
gcagtacgta ttaccattt accaactggt gtcattgcaa catcttctga gaagtctcaa 780
attcaaaacc gtgaaaaagc aatgaaagtg ttaaaagcac gtttatacga tatgaaagt 840
caagaagaac aacaaaagta tgcgtcacia cgtaaatcag cagtcgggtac tgggtatcgt 900
tcagaacgta ttcgaactta taattatcca caaagccgtg taacagacca ttgtataggt 960
ctaacgcttc aaaaattagg gcaaattatg gaaggccatt tagaagaaat tatagatgca 1020
ctgactttat cagagcagac agataaattg aaagaactta ataatgggtga attataa 1077

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<210> 178
 <211> 358
 <212> PRT
 <213> Staphylococcus aureus

<400> 178

Val	Phe	Asp	Gln	Leu	Asp	Ile	Val	Glu	Glu	Arg	Tyr	Glu	Gln	Leu	Asn
1				5				10						15	
Glu	Leu	Leu	Ser	Asp	Pro	Asp	Val	Val	Asn	Asp	Ser	Asp	Lys	Leu	Arg
			20					25					30		
Lys	Tyr	Ser	Lys	Glu	Gln	Ala	Asp	Leu	Gln	Lys	Thr	Val	Asp	Val	Tyr
		35					40					45			
Arg	Asn	Tyr	Lys	Ala	Lys	Lys	Glu	Glu	Leu	Ala	Asp	Ile	Glu	Glu	Met
	50					55					60				
Leu	Ser	Glu	Thr	Asp	Asp	Lys	Glu	Glu	Val	Glu	Met	Leu	Lys	Glu	Glu
65					70					75					80
Ser	Asn	Gly	Ile	Lys	Ala	Glu	Leu	Pro	Asn	Leu	Glu	Glu	Glu	Leu	Lys
				85					90					95	
Ile	Leu	Leu	Ile	Pro	Lys	Asp	Pro	Asn	Asp	Asp	Lys	Asp	Val	Ile	Val
			100					105					110		
Glu	Ile	Arg	Ala	Ala	Ala	Gly	Gly	Asp	Glu	Ala	Ala	Ile	Phe	Ala	Gly
		115					120					125			
Asp	Leu	Met	Arg	Met	Tyr	Ser	Lys	Tyr	Ala	Glu	Ser	Gln	Gly	Phe	Lys
	130						135				140				
Thr	Glu	Ile	Val	Glu	Ala	Ser	Glu	Ser	Asp	His	Gly	Gly	Tyr	Lys	Glu
145					150					155					160
Ile	Ser	Phe	Ser	Val	Ser	Gly	Asn	Gly	Ala	Tyr	Ser	Lys	Leu	Lys	Phe
				165					170					175	
Glu	Asn	Gly	Ala	His	Arg	Val	Gln	Arg	Val	Pro	Glu	Thr	Glu	Ser	Gly
			180					185					190		
Gly	Arg	Ile	His	Thr	Ser	Thr	Ala	Thr	Val	Ala	Val	Leu	Pro	Glu	Val
		195					200					205			
Glu	Asp	Val	Glu	Ile	Glu	Ile	Arg	Asn	Glu	Asp	Leu	Lys	Ile	Asp	Thr
	210					215					220				
Tyr	Arg	Ser	Ser	Gly	Ala	Gly	Gly	Gln	His	Val	Asn	Thr	Thr	Asp	Ser
225					230					235					240
Ala	Val	Arg	Ile	Thr	His	Leu	Pro	Thr	Gly	Val	Ile	Ala	Thr	Ser	Ser
				245					250					255	
Glu	Lys	Ser	Gln	Ile	Gln	Asn	Arg	Glu	Lys	Ala	Met	Lys	Val	Leu	Lys
			260					265					270		

Ala Arg Leu Tyr Asp Met Lys Val Gln Glu Glu Gln Gln Lys Tyr Ala
 275 280 285

Ser Gln Arg Lys Ser Ala Val Gly Thr Gly Asp Arg Ser Glu Arg Ile
 290 295 300

Arg Thr Tyr Asn Tyr Pro Gln Ser Arg Val Thr Asp His Cys Ile Gly
 305 310 315 320

Leu Thr Leu Gln Lys Leu Gly Gln Ile Met Glu Gly His Leu Glu Glu
 325 330 335

Ile Ile Asp Ala Leu Thr Leu Ser Glu Gln Thr Asp Lys Leu Lys Glu
 340 345 350

Leu Asn Asn Gly Glu Leu
 355

<210> 179
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 179
 gcggcgccgccc atatggctgt aactaagctg gttc

34

<210> 180
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 180
 gcgcggatcc ttaccaggat ttctcaacgg gc

32

<210> 181
 <211> 18
 <212> PRT
 <213> Staphylococcus aureus

<400> 181
 Thr Ser Thr Ala Thr Val Ala Val Leu Pro Glu Val Glu Asp Val Glu
 1 5 10 15

Ile Glu

<210> 182
 <211> 9
 <212> PRT
 <213> *Staphylococcus aureus*

<400> 182
 Glu Leu Lys Ile Leu Leu Ile Pro Lys
 1 5

<210> 183
 <211> 7
 <212> PRT
 <213> *Staphylococcus aureus*

<400> 183
 Met Lys Val Leu Lys Ala Arg
 1 5

<210> 184
 <211> 1290
 <212> DNA
 <213> *Streptococcus pneumoniae*

<400> 184
 atgaaattac aaaaaccaa aggaacgcag gatattttac ctgctgagtc tgctaagtgg 60
 cagtacgttg agggctttgc ccgtgagatt ttcaaacgct acaactatgc agaagtgcgc 120
 acgcctattt ttgagcatta cgagggttacc agtcgctctg tcggagatac aacggatata 180
 gtaaccaagg aaatgtacga tttttatgac aagggtgacc gtcataattac cctccgtcca 240
 gaaggaactg caccgcgttg ccgttcctat gtggaaaata aacttttcgc cccagaagtg 300
 caaaagccaa gcaagttcta ctacatggga cctatgttcc gttatgagcg tccacaggca 360
 gggcgcttgc gccaaattcca ccagattggg gttgagtgtt ttggctctag caatccagct 420
 accgatgtgg aaacaatcgc tatggcagcc cattttttga aggaaatcgg tattcaaggt 480
 gtcaaattgc acctcaacac tcttggaat cctgagagcc gtgcagccta ccgccaagcc 540
 ttgattgact atttgacacc gctcaaggag acctgtcta aggatagcca acgtcgcttg 600
 gaggaaaatc ctcttcgtgt cttggactct aaggaaaaag aagacaaggt ggcagtagag 660
 aatgcgccgt ctatcttggga ctttcttgat gaagaaagcc aagctcattt tgatgctgtg 720
 cgtcagatgt tggaaaatct tggagtagat tacatcatcg ataccaatat ggtgcgtggg 780
 ctggactact acaaccacac catttttcgag tttatcacag agattgaggg caatgacctg 840
 accgtctgtg cgggtgggtg ctacgatggg ttggttgctt actttggagg ccctgaaact 900
 gctggatttg gttttggact tgggtgtagag cgctgcttc tcatccttga aaagcaaggt 960
 gtgaccctcc ctatcgaaaa cgccctagat gtctatatcg cagtcttggg cgaaggggca 1020
 aatatcaagg ccttgggaatt ggtacaggct cttcgccaac aaggtttcaa agcagagcgt 1080
 gattacctca accgtaaact aaaagctcag ttcaagtcag ccgatgtctt tgcggctaag 1140
 accctcatca ccctaggaga gagcgaagtc gaaagcggac aagtgcgggt caagaacaac 1200
 caaaccggag aagaagtgc aagtgtcact gagacaatca gccaaaactt ctcagaaatc 1260
 tttgaaaaac taggatttta tactcaataa 1290

<210> 185
 <211> 429
 <212> PRT
 <213> *Streptococcus pneumoniae*

<400> 185
 Met Lys Leu Gln Lys Pro Lys Gly Thr Gln Asp Ile Leu Pro Ala Glu
 1 5 10 15

Ser	Ala	Lys	Trp	Gln	Tyr	Val	Glu	Gly	Phe	Ala	Arg	Glu	Ile	Phe	Lys	20	25	30	
Arg	Tyr	Asn	Tyr	Ala	Glu	Val	Arg	Thr	Pro	Ile	Phe	Glu	His	Tyr	Glu	35	40	45	
Val	Ile	Ser	Arg	Ser	Val	Gly	Asp	Thr	Thr	Asp	Ile	Val	Thr	Lys	Glu	50	55	60	
Met	Tyr	Asp	Phe	Tyr	Asp	Lys	Gly	Asp	Arg	His	Ile	Thr	Leu	Arg	Pro	65	70	75	80
Glu	Gly	Thr	Ala	Pro	Val	Val	Arg	Ser	Tyr	Val	Glu	Asn	Lys	Leu	Phe	85	90	95	
Ala	Pro	Glu	Val	Gln	Lys	Pro	Ser	Lys	Phe	Tyr	Tyr	Met	Gly	Pro	Met	100	105	110	
Phe	Arg	Tyr	Glu	Arg	Pro	Gln	Ala	Gly	Arg	Leu	Arg	Gln	Phe	His	Gln	115	120	125	
Ile	Gly	Val	Glu	Cys	Phe	Gly	Ser	Ser	Asn	Pro	Ala	Thr	Asp	Val	Glu	130	135	140	
Thr	Ile	Ala	Met	Ala	Ala	His	Phe	Leu	Lys	Glu	Ile	Gly	Ile	Gln	Gly	145	150	155	160
Val	Lys	Leu	His	Leu	Asn	Thr	Leu	Gly	Asn	Pro	Glu	Ser	Arg	Ala	Ala	165	170	175	
Tyr	Arg	Gln	Ala	Leu	Ile	Asp	Tyr	Leu	Thr	Pro	Leu	Lys	Glu	Thr	Leu	180	185	190	
Ser	Lys	Asp	Ser	Gln	Arg	Arg	Leu	Glu	Glu	Asn	Pro	Leu	Arg	Val	Leu	195	200	205	
Asp	Ser	Lys	Glu	Lys	Glu	Asp	Lys	Val	Ala	Val	Glu	Asn	Ala	Pro	Ser	210	215	220	
Ile	Leu	Asp	Phe	Leu	Asp	Glu	Glu	Ser	Gln	Ala	His	Phe	Asp	Ala	Val	225	230	235	240
Arg	Gln	Met	Leu	Glu	Asn	Leu	Gly	Val	Asp	Tyr	Ile	Ile	Asp	Thr	Asn	245	250	255	
Met	Val	Arg	Gly	Leu	Asp	Tyr	Tyr	Asn	His	Thr	Ile	Phe	Glu	Phe	Ile	260	265	270	
Thr	Glu	Ile	Glu	Gly	Asn	Asp	Leu	Thr	Val	Cys	Ala	Gly	Gly	Arg	Tyr	275	280	285	
Asp	Gly	Leu	Val	Ala	Tyr	Phe	Gly	Gly	Pro	Glu	Thr	Ala	Gly	Phe	Gly	290	295	300	
Phe	Gly	Leu	Gly	Val	Glu	Arg	Leu	Leu	Leu	Ile	Leu	Glu	Lys	Gln	Gly	305	310	315	320

Val	Thr	Leu	Pro	Ile	Glu	Asn	Ala	Leu	Asp	Val	Tyr	Ile	Ala	Val	Leu
				325					330					335	
Gly	Glu	Gly	Ala	Asn	Ile	Lys	Ala	Leu	Glu	Leu	Val	Gln	Ala	Leu	Arg
			340					345					350		
Gln	Gln	Gly	Phe	Lys	Ala	Glu	Arg	Asp	Tyr	Leu	Asn	Arg	Lys	Leu	Lys
		355					360					365			
Ala	Gln	Phe	Lys	Ser	Ala	Asp	Val	Phe	Ala	Ala	Lys	Thr	Leu	Ile	Thr
	370					375					380				
Leu	Gly	Glu	Ser	Glu	Val	Glu	Ser	Gly	Gln	Val	Thr	Val	Lys	Asn	Asn
385					390					395					400
Gln	Thr	Arg	Glu	Glu	Val	Gln	Val	Ser	Leu	Glu	Thr	Ile	Ser	Gln	Asn
				405					410					415	
Phe	Ser	Glu	Ile	Phe	Glu	Lys	Leu	Gly	Phe	Tyr	Thr	Gln			
			420					425							

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<210> 186
<211> 1290
<212> DNA
<213> Streptococcus pneumoniae
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<400> 186						
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acgcctattt	ttgagcatta	cgagcgttatc	agtcgccttg	tcgagataac	aacggatatc	180
gtaaccaagg	aaatgtacga	tttttatgac	aagggtgacc	gtcatattac	cctccgtcca	240
gaaggaaactg	cgcccgttgt	ccgttcctat	gtggaaaata	aactcttcgc	cccagaagtg	300
caaaagccaa	gcaagttcta	ctatatggga	cctatgttcc	gttatgagcg	tccacaggca	360
gggcgcttgc	gccaatccca	ccagattggt	gttgagtgtt	ttggctctag	caatccagct	420
accgatgtgg	aaacaatcgt	tatggcagcc	cattttttga	aggaaatcgg	tattcaaggt	480
gtcaaattgc	acctcaacac	tcttggaat	cccgtaggcc	gtgcagccta	ccgccaaagc	540
ttgattgact	atttgacacc	gctcaaggag	ccttgctcta	aggatagcca	acgtcgcttg	600
gaggaaaatc	ctcttcgtgt	cttgactct	aaggaaaaag	aagacaaggt	ggctgtagag	660
aatgcgccat	ctatcttgga	tttccttgat	gaagaaagtc	aagctcattt	tgatgctgtg	720
cgtcagatgt	tggaaaatct	tggagtagac	tacatcatcg	ataccaatat	ggtgcgtggt	780
ctggactact	acaaccacac	cattttcgag	tttatcacag	agattgaggg	caatgacttg	840
acaactctgt	cgggtggtcg	ctatgatggt	tggttgctt	actttggagg	ccctgaaact	900
cgctggatttg	gttttgggct	tggtgtagag	cgcctgcttc	tcatacctga	aaaacaaggc	960
gtggccctcc	ctatcgaaaa	cgcctagat	gtctatatcg	cagtccttgg	tgatggagca	1020
aatgtcaaag	ccctagaact	agtccaagtc	cttcgccaac	aaggtttcaa	agcagagcgt	1080
gattacctca	accgtaagct	caaagctcag	ttcaagtcag	ccgatgtcct	tgcggtctaa	1140
accctcatca	ccctaggaga	gagcgaagtc	gaaagcgggc	aagtgacggt	caagaacaac	1200
caaacccgag	aggaagtgc	agtgtcactt	gagacaatca	gccaaaactt	ctcagaaatc	1260
tttqaaaaaac	tagqatttta	tactcaataa				1290

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<210> 187
<211> 429
<212> PRT
<213> Streptococcus pneumoniae
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<400> 187

Met	Lys	Leu	Gln	Lys	Pro	Lys	Gly	Thr	Gln	Asp	Ile	Leu	Pro	Ala	Glu
1				5					10					15	
Ser	Ala	Lys	Trp	Gln	Tyr	Val	Glu	Gly	Phe	Ala	Arg	Glu	Ile	Phe	Lys
			20					25					30		
Arg	Tyr	Asn	Tyr	Ala	Glu	Val	Arg	Thr	Pro	Ile	Phe	Glu	His	Tyr	Glu
		35					40					45			
Val	Ile	Ser	Arg	Ser	Val	Gly	Asp	Thr	Thr	Asp	Ile	Val	Thr	Lys	Glu
	50					55					60				
Met	Tyr	Asp	Phe	Tyr	Asp	Lys	Gly	Asp	Arg	His	Ile	Thr	Leu	Arg	Pro
65					70				75						80
Glu	Gly	Thr	Ala	Pro	Val	Val	Arg	Ser	Tyr	Val	Glu	Asn	Lys	Leu	Phe
				85					90					95	
Ala	Pro	Glu	Val	Gln	Lys	Pro	Ser	Lys	Phe	Tyr	Tyr	Met	Gly	Pro	Met
			100					105					110		
Phe	Arg	Tyr	Glu	Arg	Pro	Gln	Ala	Gly	Arg	Leu	Arg	Gln	Phe	His	Gln
		115				120						125			
Ile	Gly	Val	Glu	Cys	Phe	Gly	Ser	Ser	Asn	Pro	Ala	Thr	Asp	Val	Glu
	130					135					140				
Thr	Ile	Val	Met	Ala	Ala	His	Phe	Leu	Lys	Glu	Ile	Gly	Ile	Gln	Gly
145					150					155					160
Val	Lys	Leu	His	Leu	Asn	Thr	Leu	Gly	Asn	Pro	Glu	Ser	Arg	Ala	Ala
				165					170					175	
Tyr	Arg	Gln	Ala	Leu	Ile	Asp	Tyr	Leu	Thr	Pro	Leu	Lys	Glu	Thr	Leu
			180					185					190		
Ser	Lys	Asp	Ser	Gln	Arg	Arg	Leu	Glu	Glu	Asn	Pro	Leu	Arg	Val	Leu
		195					200					205			
Asp	Ser	Lys	Glu	Lys	Glu	Asp	Lys	Val	Ala	Val	Glu	Asn	Ala	Pro	Ser
		210				215					220				
Ile	Leu	Asp	Phe	Leu	Asp	Glu	Glu	Ser	Gln	Ala	His	Phe	Asp	Ala	Val
225					230					235					240
Arg	Gln	Met	Leu	Glu	Asn	Leu	Gly	Val	Asp	Tyr	Ile	Ile	Asp	Thr	Asn
			245						250					255	
Met	Val	Arg	Gly	Leu	Asp	Tyr	Tyr	Asn	His	Thr	Ile	Phe	Glu	Phe	Ile
			260					265					270		
Thr	Glu	Ile	Glu	Gly	Asn	Asp	Leu	Thr	Ile	Cys	Ala	Gly	Gly	Arg	Tyr
		275					280					285			
Asp	Gly	Leu	Val	Ala	Tyr	Phe	Gly	Gly	Pro	Glu	Thr	Ala	Gly	Phe	Gly
	290					295					300				

Phe Gly Leu Gly Val Glu Arg Leu Leu Leu Ile Leu Glu Lys Gln Gly
 305 310 315 320

Val Ala Leu Pro Ile Glu Asn Ala Leu Asp Val Tyr Ile Ala Val Leu
 325 330 335

Gly Asp Gly Ala Asn Val Lys Ala Leu Glu Leu Val Gln Val Leu Arg
 340 345 350

Gln Gln Gly Phe Lys Ala Glu Arg Asp Tyr Leu Asn Arg Lys Leu Lys
 355 360 365

Ala Gln Phe Lys Ser Ala Asp Val Phe Ala Ala Lys Thr Leu Ile Thr
 370 375 380

Leu Gly Glu Ser Glu Val Glu Ser Gly Gln Val Thr Val Lys Asn Asn
 385 390 395 400

Gln Thr Arg Glu Glu Val Gln Val Ser Leu Glu Thr Ile Ser Gln Asn
 405 410 415

Phe Ser Glu Ile Phe Glu Lys Leu Gly Phe Tyr Thr Gln
 420 425

<210> 188

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 188

gcggcggccc atatgaaatt acaaaaacca aaagg

35

<210> 189

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 189

gcgcgatcc ttgagtataa aatcctagtt tttc

34

<210> 190

<211> 33

<212> PRT

<213> Streptococcus pneumoniae

<400> 190

Gly Leu Gly Val Glu Arg Leu Leu Leu Ile Leu Glu Lys Gln Gly Val
 1 5 10 15

Thr Leu Pro Ile Glu Asn Ala Leu Asp Val Tyr Ile Ala Val Leu Gly
 20 25 30

Glu

<210> 191

<211> 8

<212> PRT

<213> Streptococcus pneumoniae

<400> 191

Thr Ala Pro Val Val Arg Ser Tyr
 1 5

<210> 192

<211> 13

<212> PRT

<213> Streptococcus pneumoniae

<400> 192

Ile Lys Ala Leu Glu Leu Val Gln Ala Leu Arg Gln Gln
 1 5 10

<210> 193

<211> 936

<212> DNA

<213> Streptococcus pneumoniae

<400> 193

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atgaaatcct accaagctgt ctaccaaata ctatctaaag aaaccgacta tatcagcgga 60
gaaaaaatcg cagaaaaact atccctaagc cgaacagcaa tttggaaagc catcaagcga 120
ctagaacaag aaggcattga aattgatagt atcaaaaaata gaggatataa actgatgaat 180
ggtgacctta ttctccaga gattctagaa gaaaatcttc caattaaagt cagctttaa 240
cccgaacaa aatcaacaca actagatgca aaagaagcaa ttgatttagg ccatgaagca 300
aataccctct atctagcttc ctatcaaaca gcaggccgag gccgttttca acgttccttc 360
tactcaccac aaggtggtat ttatatgaca ctccatctta aaccaaactc cccctatgac 420
aaattaccat cctacacact acttgtagct ggagctgtct acaaagccat taagaacct 480
actttaatag atgtcgacat aaaatgggtc aatgatatct atctaaacaa tcataaaatt 540
ggaggaatcc ttactgaagc aatgacctct gtagaaactg gcttagtcac agatatcatt 600
attggagtag gtatcaattt cactattaaa gacttcctc aggaattaaa agaaaaagct 660
gccagcttat ttaaagctac agctcctata acaaggaatg aattgatcat agaaatctgg 720
cgtgctttct tcgaaacacc agcagaagag ctattatacc tatacaaaaa acagtcattc 780
attctaggaa aagaagtcac ttccacacta gagcaaaaag actacaaggg acttgctaaa 840
gacatctcag aaaatggaaa acttttagtt caatgtgata acggaaaaga aatctggcta 900
aatagtggcg aaatttctct caatagttgg aagtaa 936

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Lys Asp Tyr Lys Gly Leu Ala Lys Asp Ile Ser Glu Asn Gly Lys Leu
 275 280 285

Leu Val Gln Cys Asp Asn Gly Lys Glu Ile Trp Leu Asn Ser Gly Glu
 290 295 300

Ile Ser Leu Asn Ser Trp Lys
 305 310

<210> 195

<211> 936

<212> DNA

<213> Streptococcus pneumoniae

<400> 195

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atgaaatcct accaagctgt ctaccaaact ctatctaaag aaaccgacta tatcagcggg 60
gaaaaaatcg cagaaaaaact atccctaagc cgaacagcaa tttggaaagc catcaagcga 120
ctagaacaag aaggcattga aattgatagt atcaaaaata gaggatataa actgatgaat 180
ggtgacctta ttcttcaga gattctagaa gaaaatcttc caattaaagt cagcttttaa 240
cccgaaacaa aatcaacaca actagatgca aaagaagcaa ttgatttagg ccatgaagca 300
aataccctct atctagcttc ctatcaaaca gcaggccgag gccgttttca acgttccttc 360
tactcaccac aaggtggtat ttatatgaca ctccatctta aaccaaactc cccctatgac 420
aaattaccat cctacacact acttgtagct ggagctgtct acaaagccat taagaacct 480
actttaatag atgtcgacat aaaatgggtc aatgatattc atctaaacaa tcataaaatt 540
ggaggaatcc ttactgaagc aatgacctct gtagaaactg gcttagtcac agatatcatt 600
attggagtag gtatcaattt cactattaaa gacttccttc aggaattaaa agaaaaagct 660
gccagcttat ttaaagctac agctcctata acaaggaatg aattgatcat agaaatctgg 720
cgtactttct tcgaaacacc agcagaagag ctattatacc tatacaaaaa acagtcattc 780
attctaggaa aagaagtcac ttccacacta gagcaaaaag actacaaggg acttgctaaa 840
gacatctcag aaaatggaaa acttttagtt caatgtgata acggaaaaga aatctggcta 900
aatagtggcg aaatttctct caatagttag aagtaa 936

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<210> 196

<211> 311

<212> PRT

<213> Streptococcus pneumoniae

<400> 196

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Met Lys Ser Tyr Gln Ala Val Tyr Gln Ile Leu Ser Lys Glu Thr Asp
  1          5          10          15

Tyr Ile Ser Gly Glu Lys Ile Ala Glu Lys Leu Ser Leu Ser Arg Thr
      20          25          30

Ala Ile Trp Lys Ala Ile Lys Arg Leu Glu Gln Glu Gly Ile Glu Ile
      35          40          45

Asp Ser Ile Lys Asn Arg Gly Tyr Lys Leu Met Asn Gly Asp Leu Ile
      50          55          60

Leu Pro Glu Ile Leu Glu Asn Leu Pro Ile Lys Val Ser Phe Lys
      65          70          75          80

Pro Glu Thr Lys Ser Thr Gln Leu Asp Ala Lys Glu Ala Ile Asp Leu
      85          90          95

```

Gly His Glu Ala Asn Thr Leu Tyr Leu Ala Ser Tyr Gln Thr Ala Gly
 100 105 110
 Arg Gly Arg Phe Gln Arg Ser Phe Tyr Ser Pro Gln Gly Gly Ile Tyr
 115 120 125
 Met Thr Leu His Leu Lys Pro Asn Leu Pro Tyr Asp Lys Leu Pro Ser
 130 135 140
 Tyr Thr Leu Leu Val Ala Gly Ala Val Tyr Lys Ala Ile Lys Asn Leu
 145 150 155 160
 Thr Leu Ile Asp Val Asp Ile Lys Trp Val Asn Asp Ile Tyr Leu Asn
 165 170 175
 Asn His Lys Ile Gly Gly Ile Leu Thr Glu Ala Met Thr Ser Val Glu
 180 185 190
 Thr Gly Leu Val Thr Asp Ile Ile Ile Gly Val Gly Ile Asn Phe Thr
 195 200 205
 Ile Lys Asp Phe Pro Gln Glu Leu Lys Glu Lys Ala Ala Ser Leu Phe
 210 215 220
 Lys Ala Thr Ala Pro Ile Thr Arg Asn Glu Leu Ile Ile Glu Ile Trp
 225 230 235 240
 Arg Thr Phe Phe Glu Thr Pro Ala Glu Glu Leu Leu Tyr Leu Tyr Lys
 245 250 255
 Lys Gln Ser Phe Ile Leu Gly Lys Glu Val Thr Phe Thr Leu Glu Gln
 260 265 270
 Lys Asp Tyr Lys Gly Leu Ala Lys Asp Ile Ser Glu Asn Gly Lys Leu
 275 280 285
 Leu Val Gln Cys Asp Asn Gly Lys Glu Ile Trp Leu Asn Ser Gly Glu
 290 295 300
 Ile Ser Leu Asn Ser Trp Lys
 305 310

<210> 197

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 197

gcggcggccc atatgaaatc ctaccaagct gtc

<210> 198
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 198
 gcgcggatcc cttccaacta ttgagagaaa tttc

34

<210> 199
 <211> 41
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 199
 Tyr Met Thr Leu His Leu Lys Pro Asn Leu Pro Tyr Asp Lys Leu Pro
 1 5 10 15
 Ser Tyr Thr Leu Leu Val Ala Gly Ala Val Tyr Lys Ala Ile Lys Asn
 20 25 30
 Leu Thr Leu Ile Asp Val Asp Ile Lys
 35 40

<210> 200
 <211> 7
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 200
 Lys Leu Leu Val Gln Cys Asp
 1 5

<210> 201
 <211> 9
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 201
 Tyr Gln Ala Val Tyr Gln Ile Leu Ser
 1 5

<210> 202
 <211> 1077
 <212> DNA
 <213> Streptococcus pneumoniae

<400> 202
 atgggatata cagttgctgt agtcggcgcg acaggtgctg tcggtgctca gatgataaaa 60
 atgttggaag aatcaacact tccaatcgat aaaattcggt accttgcttc tgcacgttca 120
 gcaggttaagt cattgaaatt taaagatcaa gatattacaa ttgaagaaac gactgaaaca 180

```

gcttttgaag gagttgatat tgctctcttt tcagcaggta gttctacatc agctaagtat 240
gcaccatacg cagtaaaagc tggcgtggta gtagtagata atacatctta tttccgtcaa 300
aatccagatg ttcctttggg tggtccagag gtcaatgctc atgcacttga tgctcacaac 360
ggaatcattg cctgccctaa ttgttcaaca attcaaatga tgggtggctct tgagccggtt 420
cgccaaaaat ggggcttgga ccgtatcatt gtttcaactt atcaagccgt ttcaggtgct 480
ggatatgggag caattcttga gacacaacgt gaacttcgtg aagtcttgaa tgatgggtgtg 540
aaaccacgtg atttgcacgc ggaaatcttg ccttcagggtg gtgacaagaa acattatcct 600
atcgcccttta acgctcttcc acaaattgat gttttcactg ataatgatta cacgtacgaa 660
gagatgaaga tgaccaagga aactaagaaa attatggaag atgatagcat tgcagtatct 720
gcaacatgtg tgcgtattcc agtcttgtca gctcactctg agtctgttta tatcgaaaca 780
aaagaagtgg ctccaatcga agaagtaaaa gcagctatcg cagccttccc aggtgctgtt 840
cttgaagatg atgtagctca tcaaattctat cctcaagcta tcaatgcagt tggttcgcgt 900
gatacctttg ttggtcgtat ccgtaaagac ttggatgcag aaaaaggaat tcacatgtgg 960
gttgtttcag ataaccttct caaaggtgct gcttggaaact cagttcagat tgctgaaact 1020
cttcatgaac gtggattggg tcgtccaaca gccgaattga aatttgaatt aaaatag 1077

```

<210> 203

<211> 358

<212> PRT

<213> *Streptococcus pneumoniae*

<400> 203

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Met Gly Tyr Thr Val Ala Val Val Gly Ala Thr Gly Ala Val Gly Ala
  1              5              10              15

Gln Met Ile Lys Met Leu Glu Glu Ser Thr Leu Pro Ile Asp Lys Ile
      20              25              30

Arg Tyr Leu Ala Ser Ala Arg Ser Ala Gly Lys Ser Leu Lys Phe Lys
      35              40              45

Asp Gln Asp Ile Thr Ile Glu Glu Thr Thr Glu Thr Ala Phe Glu Gly
      50              55              60

Val Asp Ile Ala Leu Phe Ser Ala Gly Ser Ser Thr Ser Ala Lys Tyr
      65              70              75              80

Ala Pro Tyr Ala Val Lys Ala Gly Val Val Val Val Asp Asn Thr Ser
      85              90              95

Tyr Phe Arg Gln Asn Pro Asp Val Pro Leu Val Val Pro Glu Val Asn
      100             105             110

Ala His Ala Leu Asp Ala His Asn Gly Ile Ile Ala Cys Pro Asn Cys
      115             120             125

Ser Thr Ile Gln Met Met Val Ala Leu Glu Pro Val Arg Gln Lys Trp
      130             135             140

Gly Leu Asp Arg Ile Ile Val Ser Thr Tyr Gln Ala Val Ser Gly Ala
      145             150             155             160

Gly Met Gly Ala Ile Leu Glu Thr Gln Arg Glu Leu Arg Glu Val Leu
      165             170             175

Asn Asp Gly Val Lys Pro Arg Asp Leu His Ala Glu Ile Leu Pro Ser
      180             185             190

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Gly Gly Asp Lys Lys His Tyr Pro Ile Ala Phe Asn Ala Leu Pro Gln
 195 200 205
 Ile Asp Val Phe Thr Asp Asn Asp Tyr Thr Tyr Glu Glu Met Lys Met
 210 215 220
 Thr Lys Glu Thr Lys Lys Ile Met Glu Asp Asp Ser Ile Ala Val Ser
 225 230 235 240
 Ala Thr Cys Val Arg Ile Pro Val Leu Ser Ala His Ser Glu Ser Val
 245 250 255
 Tyr Ile Glu Thr Lys Glu Val Ala Pro Ile Glu Glu Val Lys Ala Ala
 260 265 270
 Ile Ala Ala Phe Pro Gly Ala Val Leu Glu Asp Asp Val Ala His Gln
 275 280 285
 Ile Tyr Pro Gln Ala Ile Asn Ala Val Gly Ser Arg Asp Thr Phe Val
 290 295 300
 Gly Arg Ile Arg Lys Asp Leu Asp Ala Glu Lys Gly Ile His Met Trp
 305 310 315 320
 Val Val Ser Asp Asn Leu Leu Lys Gly Ala Ala Trp Asn Ser Val Gln
 325 330 335
 Ile Ala Glu Thr Leu His Glu Arg Gly Leu Val Arg Pro Thr Ala Glu
 340 345 350
 Leu Lys Phe Glu Leu Lys
 355

<210> 204
 <211> 1077
 <212> DNA
 <213> Streptococcus pneumoniae

<400> 204
 atgggatata cagttgctgt agtcggcgcg acaggtgctg tcggtgctca gatgataaaa 60
 atggttgaag aatcaacact tccaattgat aaaatccgtt accttgcttc tgcacgttca 120
 gcaggtgaag cattgaaatt taaagatcaa gatattacga ttgaagaaac gactgaaaca 180
 gcttttgaag gagttgatat tgctctcttt tcagcaggtg attcgacatc agctaagtat 240
 gcaccatacg cagtaaaagc tggcgtggta gtagtggata atacatotta tttccgtcaa 300
 aatccagatg ttcctttggg tggtccagag gtcaatgctc atgcacttga tgcccacaac 360
 ggaatcattg cctgcccctaa ctgttcaaca atccaaatga tgggtggctct tgagccgggt 420
 cgccaaaaat ggggcttgga ccgtatcatt gtttcaactt atcaagccgt ttcaggtgct 480
 ggtatgggag caattcttga gacacaacgt gaacttcgtg aagtcttgaa tgatgggtgtg 540
 aaaccacgtg atttgcatgc ggaaatctta ccttcaggcg gtgacaagaa acattatcct 600
 atcgccctca atgctcttcc acaaatcgat gtcttcaactg acaatgatta cacttacgaa 660
 gagatgaaga tgaccaagga aactaagaaa attatggaag atgatagcat tgcagtatct 720
 gcaacatgtg tacgtattcc agtcttgtca gctcactctg agtctgttta tatcgaaaca 780
 aaagaagtgg ctccaatcga agaagtaaaa gcagctatcg cagccttccc aggtgctgtt 840
 cttgaagatg atgtagctca tcaaactctat cctcaagcta tcaatgcagt tgggtcgcgt 900
 gatacctttg ttggtcgtat ccgtaaagac ttggatgcag aaaaaggaat tcacatgtgg 960
 gttgtttcag ataaccttct caaagggtgct gcttgggaact cagttcagat tgctgaaact 1020

1077

<211> 358

<213> Streptococcus pneumoniae

<400> 205

Ala Thr Cys Val Arg Ile Pro Val Leu Ser Ala His Ser Glu Ser Val
245 250 255

Tyr Ile Glu Thr Lys Glu Val Ala Pro Ile Glu Glu Val Lys Ala Ala
 260 265 270
 Ile Ala Ala Phe Pro Gly Ala Val Leu Glu Asp Asp Val Ala His Gln
 275 280 285
 Ile Tyr Pro Gln Ala Ile Asn Ala Val Gly Ser Arg Asp Thr Phe Val
 290 295 300
 Gly Arg Ile Arg Lys Asp Leu Asp Ala Glu Lys Gly Ile His Met Trp
 305 310 315 320
 Val Val Ser Asp Asn Leu Leu Lys Gly Ala Ala Trp Asn Ser Val Gln
 325 330 335
 Ile Ala Glu Thr Leu His Glu Arg Gly Leu Val Arg Pro Thr Ala Glu
 340 345 350
 Leu Lys Phe Glu Leu Lys
 355

<210> 206
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 206
 gcggcgcccc atatgggata tacagttgct gtag

34

<210> 207
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 207
 gcgcgatcc ttttaattca aatttcaatt cggc

34

<210> 208
 <211> 62
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 208
 Ser Ile Ala Val Ser Ala Thr Cys Val Arg Ile Pro Val Leu Ser Ala
 1 5 10 15

His Ser Glu Ser Val Tyr Ile Glu Thr Lys Glu Val Ala Pro Ile Glu
 20 25 30

Glu Val Lys Ala Ala Ile Ala Ala Phe Pro Gly Ala Val Leu Glu Asp
 35 40 45

Asp Val Ala His Gln Ile Tyr Pro Gln Ala Ile Asn Ala Val
 50 55 60

<210> 209

<211> 19

<212> PRT

<213> Streptococcus pneumoniae

<400> 209

Ser Ala Lys Tyr Ala Pro Tyr Ala Val Lys Ala Gly Val Val Val Val
 1 5 10 15

Asp Asn Thr

<210> 210

<211> 17

<212> PRT

<213> Streptococcus pneumoniae

<400> 210

Asn Pro Asp Val Pro Leu Val Val Pro Glu Val Asn Ala His Ala Leu
 1 5 10 15

Asp

<210> 211

<211> 519

<212> DNA

<213> Staphylococcus aureus

<400> 211

atggatttaa agcaatacgt atcagaagtt caagattggc cgaaaccagg tgtagttttc 60
 aaggatatta ctacaattat ggataatggg gaagcatatg gctatgcaac agataaaaatt 120
 gtagaatacag caaaagacag agatgttgat atcgttgtag gacctgaagc gcgtggccttt 180
 atcattggct gtcctgtagc ttattcaatg gggattggct ttgcacctgt tagaaaagaa 240
 gggaaattac ctcgtgaagt cattcgttat gagtatgacc tagaatatgg taaaaatggt 300
 ttaacaatgc acaaagatgc aattaaacca ggtcaacgtg tgtaattac agatgattta 360
 ttagctactg gtggtacgat tgaagcagca ataaaattag ttgaaaaatt aggcgggtatc 420
 gtagtaggta ttgcatttat aattgaattg aaatatttaa atggtattga aaaaattaaa 480
 gattacgatg ttatgagttt aatctcatat gacgaataa 519

<210> 212

<211> 172

<212> PRT

<213> Staphylococcus aureus

<400> 212

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Met Asp Leu Lys Gln Tyr Val Ser Glu Val Gln Asp Trp Pro Lys Pro
 1              5              10              15

Gly Val Ser Phe Lys Asp Ile Thr Thr Ile Met Asp Asn Gly Glu Ala
      20              25              30

Tyr Gly Tyr Ala Thr Asp Lys Ile Val Glu Tyr Ala Lys Asp Arg Asp
      35              40              45

Val Asp Ile Val Val Gly Pro Glu Ala Arg Gly Phe Ile Ile Gly Cys
      50              55              60

Pro Val Ala Tyr Ser Met Gly Ile Gly Phe Ala Pro Val Arg Lys Glu
      65              70              75              80

Gly Lys Leu Pro Arg Glu Val Ile Arg Tyr Glu Tyr Asp Leu Glu Tyr
      85              90              95

Gly Thr Asn Val Leu Thr Met His Lys Asp Ala Ile Lys Pro Gly Gln
      100             105             110

Arg Val Leu Ile Thr Asp Asp Leu Leu Ala Thr Gly Gly Thr Ile Glu
      115             120             125

Ala Ala Ile Lys Leu Val Glu Lys Leu Gly Gly Ile Val Val Gly Ile
      130             135             140

Ala Phe Ile Ile Glu Leu Lys Tyr Leu Asn Gly Ile Glu Lys Ile Lys
      145             150             155             160

Asp Tyr Asp Val Met Ser Leu Ile Ser Tyr Asp Glu
      165             170

```

<210> 213

<211> 519

<212> DNA

<213> Staphylococcus aureus

<400> 213

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atggatttaa agcaatacgt atcagaagtt caagattggc cgaaaccagg tgttagtttc 60
aaggatatta ctacaattat ggataatggg gaagcatatg gctatgcaac agataaaatt 120
gtagaatacgc caaaagacag agatgttgat atcgttgtag gacctgaagc gcgtggcttt 180
atcattggct gtcctgtagc ttattcaatg gggattggct ttgcacctgt tagaaaagaa 240
gggaaattac ctcgtgaagt cattcgttat gagtatgacc tagaatatgg tacaaatggt 300
ttaacaatgc acaaagatgc aattaaacca ggtcaacgtg tgtaattac agatgattta 360
ttagctactg gtggtacgat tgaagcagca ataaaattag ttgaaaaatt aggcgggtatc 420
gtagtaggta ttgcatttat aattgaattg aaatatttaa atgggtattga aaaaattaaa 480
gattacgatg ttatgagttt aatctcatac gacgaataa 519

```

<210> 214

<211> 172

<212> PRT

<213> Staphylococcus aureus

<400> 214

Met Asp Leu Lys Gln Tyr Val Ser Glu Val Gln Asp Trp Pro Lys Pro
 1 5 10 15

Gly Val Ser Phe Lys Asp Ile Thr Thr Ile Met Asp Asn Gly Glu Ala
 20 25 30

Tyr Gly Tyr Ala Thr Asp Lys Ile Val Glu Tyr Ala Lys Asp Arg Asp
 35 40 45

Val Asp Ile Val Val Gly Pro Glu Ala Arg Gly Phe Ile Ile Gly Cys
 50 55 60

Pro Val Ala Tyr Ser Met Gly Ile Gly Phe Ala Pro Val Arg Lys Glu
 65 70 75 80

Gly Lys Leu Pro Arg Glu Val Ile Arg Tyr Glu Tyr Asp Leu Glu Tyr
 85 90 95

Gly Thr Asn Val Leu Thr Met His Lys Asp Ala Ile Lys Pro Gly Gln
 100 105 110

Arg Val Leu Ile Thr Asp Asp Leu Leu Ala Thr Gly Gly Thr Ile Glu
 115 120 125

Ala Ala Ile Lys Leu Val Glu Lys Leu Gly Gly Ile Val Val Gly Ile
 130 135 140

Ala Phe Ile Ile Glu Leu Lys Tyr Leu Asn Gly Ile Glu Lys Ile Lys
 145 150 155 160

Asp Tyr Asp Val Met Ser Leu Ile Ser Tyr Asp Glu
 165 170

<210> 215

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 215

gcggcgcat taatatggat ttaaagcaat acgtatc

37

<210> 216

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 216
gcgcggatcc ttcgtcgtat gagattaaac tc 32

<210> 217
<211> 11
<212> PRT
<213> Staphylococcus aureus

<400> 217
Gly Phe Ile Ile Gly Cys Pro Val Ala Tyr Ser
1 5 10

<210> 218
<211> 7
<212> PRT
<213> Staphylococcus aureus

<400> 218
Val Asp Ile Val Val Gly Pro
1 5

<210> 219
<211> 26
<212> PRT
<213> Staphylococcus aureus

<400> 219
Glu Ala Ala Ile Lys Leu Val Glu Lys Leu Gly Gly Ile Val Val Gly
1 5 10 15

Ile Ala Phe Ile Ile Glu Leu Lys Tyr Leu
20 25

<210> 220
<211> 777
<212> DNA
<213> Staphylococcus aureus

<400> 220
gtgtcttctt tacttgtata tgttacatat attcacgata gagaggataa gaaaatggct 60
caaatttcta aatataaacg tgtagttttg aaactaagtg gtgaagcgtt agctggagaa 120
aaaggatttg gcataaatcc agtaattatt aaaagtgttg ctgagcaagt ggctgaagtt 180
gctaaaatgg actgtgaaat cgcagtaatc gttgggtggcg gaaacatttg gagaggtaaa 240
acaggtagtg acttaggtat ggaccgtgga actgctgatt acatgggtat gcttgcaact 300
gtaatgaatg ccttagcatt acaagatagt ttagaacaat tggatttgtga tacacgagta 360
ttaacatcta ttgaaatgaa gcaagtggct gaaccttata ttcgtcgtcg tgcaattaga 420
cacttagaaa agaaacgcgt agttatTTTT gctgcaggta ttggaaaccc atacttctct 480
acagatacta cagcggcatt acgtgctgca gaagttgaag cagatgttat tttaatgggc 540
aaaaataatg tagatgggtg atattctgca gatcctaaag taaacaaaga tgcggtaaaa 600
tatgaacatt taacgcatat tcaaattgctt caagaagggt tacaagtaat ggattcaaca 660
gcattcctcat tctgtatgga taataacatt ccgttaactg ttttctctat tatggaagaa 720
ggaaatatta aacgtgctgt tatgggtgaa aagataggta cgttaattac aaaataa 777

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<210> 221
<211> 258
<212> PRT
<213> Staphylococcus aureus
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[illegible]

<210> 222
 <211> 777
 <212> DNA
 <213> *Staphylococcus aureus*

<400> 222
 gtgtcttctt tacttgtata tgttacatat attcacgata gagaggataa gaaaatggct 60
 caaatttcta aatataaacg tgtagttttg aaactaagtg gtgaagcgtt agctggagaa 120
 aaaggatttg gcataaatcc agtaattatt aaaagtgttg ctgagcaagt ggctgaagtt 180
 gctaaaatgg actgtgaaat cgcagtaatc gttgggtggcg gaaacatttg gagaggtaaa 240
 ccaggtagtg acttaggtat ggaccgtgga actgctgatt acatgggtat gcttgcaact 300
 gtaatgaatg ctttagcatt acaagatagt ttagaacaat tggattgtga tacacgagta 360
 ttaacatcta ttgaaatgaa gcaagtggct gaaccttata ttcgtcgtcg tgcaattaga 420
 cacttagaaa agaaacgcgt agttattttt gctgcaggta ttggaaaccc atacttctct 480
 acagatacta cagcggcatt acgtgctgca gaagttgaag cagatgttat tttaatgggc 540
 aaaaataatg tagatgggtg atattctgca gatcctaaag taaacaaaga tgcggtaaaa 600
 tatgaacatt taacgcata tcaaattgct caagaaggtt tacaagtaat ggattcaaca 660
 gcatacctcat tctgtatgga taataacatt ccgttaactg ttttctctat tatggaagaa 720
 ggaaatatta aacgtgctgt tatgggtgaa aagataggta cgttaattac aaaataa 777

<210> 223
 <211> 258
 <212> PRT
 <213> *Staphylococcus aureus*

<400> 223
 Val Ser Ser Leu Leu Val Tyr Val Thr Tyr Ile His Asp Arg Glu Asp
 1 5 10 15
 Lys Lys Met Ala Gln Ile Ser Lys Tyr Lys Arg Val Val Leu Lys Leu
 20 25 30
 Ser Gly Glu Ala Leu Ala Gly Glu Lys Gly Phe Gly Ile Asn Pro Val
 35 40 45
 Ile Ile Lys Ser Val Ala Glu Gln Val Ala Glu Val Ala Lys Met Asp
 50 55 60
 Cys Glu Ile Ala Val Ile Val Gly Gly Gly Asn Ile Trp Arg Gly Lys
 65 70 75 80
 Pro Gly Ser Asp Leu Gly Met Asp Arg Gly Thr Ala Asp Tyr Met Gly
 85 90 95
 Met Leu Ala Thr Val Met Asn Ala Leu Ala Leu Gln Asp Ser Leu Glu
 100 105 110
 Gln Leu Asp Cys Asp Thr Arg Val Leu Thr Ser Ile Glu Met Lys Gln
 115 120 125
 Val Ala Glu Pro Tyr Ile Arg Arg Arg Ala Ile Arg His Leu Glu Lys
 130 135 140
 Lys Arg Val Val Ile Phe Ala Ala Gly Ile Gly Asn Pro Tyr Phe Ser
 145 150 155 160

108

Thr	Asp	Thr	Thr	Ala	Ala	Leu	Arg	Ala	Ala	Glu	Val	Glu	Ala	Asp	Val
				165					170					175	
Ile	Leu	Met	Gly	Lys	Asn	Asn	Val	Asp	Gly	Val	Tyr	Ser	Ala	Asp	Pro
			180					185					190		
Lys	Val	Asn	Lys	Asp	Ala	Val	Lys	Tyr	Glu	His	Leu	Thr	His	Ile	Gln
		195					200					205			
Met	Leu	Gln	Glu	Gly	Leu	Gln	Val	Met	Asp	Ser	Thr	Ala	Ser	Ser	Phe
	210					215					220				
Cys	Met	Asp	Asn	Asn	Ile	Pro	Leu	Thr	Val	Phe	Ser	Ile	Met	Glu	Glu
225					230					235				240	
Gly	Asn	Ile	Lys	Arg	Ala	Val	Met	Gly	Glu	Lys	Ile	Gly	Thr	Leu	Ile
				245					250					255	

Thr Lys

<210> 224

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 224

gcggcgccc atatgtcttc tttacttgta tatgttac

38

<210> 225

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 225

gcgcgatcc ttttgtaatt aacgtaccta tcttttc

37

<210> 226

<211> 8

<212> PRT

<213> Staphylococcus aureus

<400> 226

Leu Leu Val Tyr Val Thr Tyr Ile

1

5

<210> 227
 <211> 12
 <212> PRT
 <213> *Staphylococcus aureus*

<400> 227
 Lys Met Asp Cys Glu Ile Ala Val Ile Val Gly Gly
 1 5 10

<210> 228
 <211> 14
 <212> PRT
 <213> *Staphylococcus aureus*

<400> 228
 Ile Ser Lys Tyr Lys Arg Val Val Leu Lys Leu Ser Gly Glu
 1 5 10

<210> 229
 <211> 627
 <212> DNA
 <213> *Streptococcus pneumoniae*

<400> 229
 atggcagacc gaggttact aatcgttttt tctggtcctt caggggttgg aaaaggaacg 60
 gttagaagag agatTTTTga gagttctgaa aaccaatttc aatattctgt atcgatgacg 120
 acacgcgcac aacgtcctgg agaagtggac ggtgttgact atttcttccg tactcgtgaa 180
 gaatttgaag agctgattcg tcaaggacag atgttggaat acgcagaata tgtcggtaac 240
 tactatggaa ctccctctgac ctatgtcaat gaaaccttgg acaaggggaat cgatgttttc 300
 cttgaaattg aagttcaggg tgctcttcag gtcaagaaaa aggttccaga tgctgtcttt 360
 atcttcctga caccaccaga tttggatgaa ttgcaagatc gcttggtagg tcgtggaaca 420
 gatagtgcag aagtgtattgc ccaacgaatc gaaaaggcca aggaagaaat tgccctcatg 480
 cgtgagtatg attatgcgat tgtcaacgat caggtacccc tagctgctga acgtgtcaaa 540
 tgtgtgattg aagcagaaca cttctgtgtg gatcgtgtca ttggtcacta tcaggagatg 600
 ttaccaaaat ctccaactac ccgataa 627

<210> 230
 <211> 208
 <212> PRT
 <213> *Streptococcus pneumoniae*

<400> 230
 Met Ala Asp Arg Gly Leu Leu Ile Val Phe Ser Gly Pro Ser Gly Val
 1 5 10 15

 Gly Lys Gly Thr Val Arg Arg Glu Ile Phe Glu Ser Ser Glu Asn Gln
 20 25 30

 Phe Gln Tyr Ser Val Ser Met Thr Thr Arg Ala Gln Arg Pro Gly Glu
 35 40 45

 Val Asp Gly Val Asp Tyr Phe Phe Arg Thr Arg Glu Glu Phe Glu Glu
 50 55 60

110

Leu	Ile	Arg	Gln	Gly	Gln	Met	Leu	Glu	Tyr	Ala	Glu	Tyr	Val	Gly	Asn	
65					70					75					80	
Tyr	Tyr	Gly	Thr	Pro	Leu	Thr	Tyr	Val	Asn	Glu	Thr	Leu	Asp	Lys	Gly	
				85					90					95		
Ile	Asp	Val	Phe	Leu	Glu	Ile	Glu	Val	Gln	Gly	Ala	Leu	Gln	Val	Lys	
			100					105					110			
Lys	Lys	Val	Pro	Asp	Ala	Val	Phe	Ile	Phe	Leu	Thr	Pro	Pro	Asp	Leu	
		115					120					125				
Asp	Glu	Leu	Gln	Asp	Arg	Leu	Val	Gly	Arg	Gly	Thr	Asp	Ser	Ala	Glu	
	130					135					140					
Val	Ile	Ala	Gln	Arg	Ile	Glu	Lys	Ala	Lys	Glu	Glu	Ile	Ala	Leu	Met	
145					150					155					160	
Arg	Glu	Tyr	Asp	Tyr	Ala	Ile	Val	Asn	Asp	Gln	Val	Pro	Leu	Ala	Ala	
				165					170					175		
Glu	Arg	Val	Lys	Cys	Val	Ile	Glu	Ala	Glu	His	Phe	Cys	Val	Asp	Arg	
			180					185					190			
Val	Ile	Gly	His	Tyr	Gln	Glu	Met	Leu	Pro	Lys	Ser	Pro	Thr	Thr	Arg	
	195						200					205				

<210> 231
 <211> 627
 <212> DNA
 <213> Streptococcus pneumoniae

<400> 231
 atggcagacc gaggttact aatcgttttt tctggtcctt caggggttgg aaaaggaacg 60
 gttagaagag agatttttga gagttctgaa aaccaatttc aatactctgt atcgatgacg 120
 acacgcgcac aacgtcctgg agaagtggac ggtgttgact atttcttccg tactcgtgaa 180
 gaatttgaag agctgattcg tcaaggacag atgttggaa acgcagaata tgtcggcaac 240
 tactatggaa ctctctgac ctatgtcaat gaaaccttgg acaaggggaat cgatgttttc 300
 cttgaaattg aagttcaggg tgctcttcag gtcaagaaaa aggttccaga tgctgtcttt 360
 atcttcctga caccaccaga tttggatgaa ttgcaagatc gcttggtagg tcgtggaaca 420
 gatagtgcag aagtgattgc ccaacgaatc gaaaaggcca aggaagaaat tgccctcatg 480
 cgtgagtatg attatgcgat tgtcaacgat caggtacccc tagctgctga acgtgtcaaa 540
 tgtgtgattg aagcagaaca cttctgtgtg gatcgtgtca ttggtcacta tcaggagatg 600
 ttaccaaatt ctccaactac ccgataa 627

<210> 232
 <211> 208
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 232
 Met Ala Asp Arg Gly Leu Leu Ile Val Phe Ser Gly Pro Ser Gly Val
 1 5 10 15

Gly Lys Gly Thr Val Arg Arg Glu Ile Phe Glu Ser Ser Glu Asn Gln
 20 25 30
 Phe Gln Tyr Ser Val Ser Met Thr Thr Arg Ala Gln Arg Pro Gly Glu
 35 40 45
 Val Asp Gly Val Asp Tyr Phe Phe Arg Thr Arg Glu Glu Phe Glu Glu
 50 55 60
 Leu Ile Arg Gln Gly Gln Met Leu Glu Tyr Ala Glu Tyr Val Gly Asn
 65 70 75 80
 Tyr Tyr Gly Thr Pro Leu Thr Tyr Val Asn Glu Thr Leu Asp Lys Gly
 85 90 95
 Ile Asp Val Phe Leu Glu Ile Glu Val Gln Gly Ala Leu Gln Val Lys
 100 105 110
 Lys Lys Val Pro Asp Ala Val Phe Ile Phe Leu Thr Pro Pro Asp Leu
 115 120 125
 Asp Glu Leu Gln Asp Arg Leu Val Gly Arg Gly Thr Asp Ser Ala Glu
 130 135 140
 Val Ile Ala Gln Arg Ile Glu Lys Ala Lys Glu Glu Ile Ala Leu Met
 145 150 155 160
 Arg Glu Tyr Asp Tyr Ala Ile Val Asn Asp Gln Val Pro Leu Ala Ala
 165 170 175
 Glu Arg Val Lys Cys Val Ile Glu Ala Glu His Phe Cys Val Asp Arg
 180 185 190
 Val Ile Gly His Tyr Gln Glu Met Leu Pro Lys Ser Pro Thr Thr Arg
 195 200 205

<210> 233

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 233

gcggcgccgccc atatggcaga ccgaggctta c

31

<210> 234

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 234

gcgcggatcc tcgggtagtt ggagattttg

30

<210> 235

<211> 33

<212> PRT

<213> Streptococcus pneumoniae

<400> 235

Asp	Tyr	Ala	Ile	Val	Asn	Asp	Gln	Val	Pro	Leu	Ala	Ala	Glu	Arg	Val
1				5					10					15	

Lys	Cys	Val	Ile	Glu	Ala	Glu	His	Phe	Cys	Val	Asp	Arg	Val	Ile	Gly
			20					25					30		

His

<210> 236

<211> 13

<212> PRT

<213> Streptococcus pneumoniae

<400> 236

Arg	Gly	Leu	Leu	Ile	Val	Phe	Ser	Gly	Pro	Ser	Gly	Val
1				5					10			

<210> 237

<211> 31

<212> PRT

<213> Streptococcus pneumoniae

<400> 237

Gly	Ile	Asp	Val	Phe	Leu	Glu	Ile	Glu	Val	Gln	Gly	Ala	Leu	Gln	Val
1				5					10					15	

Lys	Lys	Lys	Val	Pro	Asp	Ala	Val	Phe	Ile	Phe	Leu	Thr	Pro	Pro	
			20					25					30		

<210> 238

<211> 513

<212> DNA

<213> Streptococcus pneumoniae

<400> 238

atgaatttaa	aagattacat	tgcaacaatt	gaaaattatc	caaaggaagg	cattaccttc	60
cgtgatatta	gtcctttgat	ggctgatgga	aatgcttata	gctacgctgt	tcgtgaaatc	120
gttcagtatg	ctactgacaa	gaaagtcgac	atgatcgtgg	gacctgaagc	tcgtggattt	180
atcgtggggt	gtccagttgc	ctttgagttg	ggaattgggt	ttgcgcctgt	tcgtaagcca	240
ggtaaattgc	cacgcgaagt	tatttctgct	gactatgaaa	aagagtacgg	tgctgatacc	300

```

ttgactatgc acgcggatgc cattaagcca ggtcaacgtg ttcttattgt agatgacctt 360
ttggcgacag gtggaactgt taaggcaact atcgagatga ttgaaaaact tgggtggtgtt 420
atggcagggt gtgccttcct tgttgaattg gatgaattga acggccgtga aaaaattggt 480
gactacgact acaaagttct tatgcattat taa 513

```

<210> 239

<211> 170

<212> PRT

<213> Streptococcus pneumoniae

<400> 239

```

Met Asn Leu Lys Asp Tyr Ile Ala Thr Ile Glu Asn Tyr Pro Lys Glu
  1              5              10              15

Gly Ile Thr Phe Arg Asp Ile Ser Pro Leu Met Ala Asp Gly Asn Ala
      20              25              30

Tyr Ser Tyr Ala Val Arg Glu Ile Val Gln Tyr Ala Thr Asp Lys Lys
      35              40              45

Val Asp Met Ile Val Gly Pro Glu Ala Arg Gly Phe Ile Val Gly Cys
      50              55              60

Pro Val Ala Phe Glu Leu Gly Ile Gly Phe Ala Pro Val Arg Lys Pro
      65              70              75              80

Gly Lys Leu Pro Arg Glu Val Ile Ser Ala Asp Tyr Glu Lys Glu Tyr
      85              90              95

Gly Val Asp Thr Leu Thr Met His Ala Asp Ala Ile Lys Pro Gly Gln
      100             105             110

Arg Val Leu Ile Val Asp Asp Leu Leu Ala Thr Gly Gly Thr Val Lys
      115             120             125

Ala Thr Ile Glu Met Ile Glu Lys Leu Gly Gly Val Met Ala Gly Cys
      130             135             140

Ala Phe Leu Val Glu Leu Asp Glu Leu Asn Gly Arg Glu Lys Ile Gly
      145             150             155             160

Asp Tyr Asp Tyr Lys Val Leu Met His Tyr
      165             170

```

<210> 240

<211> 513

<212> DNA

<213> Streptococcus pneumoniae

<400> 240

```

atgaatttaa aagattacat tgcaacaatt gaaaattatc caaaggaagg cattaccttc 60
cgtgatatta gtcctttgat ggctgatgga aatgcttata gctacgctgt tcgtgaaatc 120
gttcagtatg ctactgacaa gaaagtcgac atgatcgtgg gacctgaagc tcgtggattt 180
atcgtggggt gtccagttgc ctttgagttg ggaattgggt ttgcgcctgt tcgtaagcca 240
ggtaaattgc cacgcgaagt tatttctgct gactatgaaa aagagtacgg tgcgataact 300
ttgactatgc acgcggatgc cattaagcca ggtcaacgtg ttcttattgt agatgacctt 360

```

```

ttggcgacag gtggaactgt taaggcaact atcgagatga ttgaaaaact tgggtggtgtt 420
atggcaggtt gtgccttctt tgttgaattg gatgaattga acggccgtga aaaaattggt 480
gactacgact acaaagttct tatgcattat taa 513

```

```

<210> 241
<211> 170
<212> PRT
<213> Streptococcus pneumoniae

```

```

<400> 241
Met Asn Leu Lys Asp Tyr Ile Ala Thr Ile Glu Asn Tyr Pro Lys Glu
  1             5             10             15

Gly Ile Thr Phe Arg Asp Ile Ser Pro Leu Met Ala Asp Gly Asn Ala
      20             25             30

Tyr Ser Tyr Ala Val Arg Glu Ile Val Gln Tyr Ala Thr Asp Lys Lys
      35             40             45

Val Asp Met Ile Val Gly Pro Glu Ala Arg Gly Phe Ile Val Gly Cys
      50             55             60

Pro Val Ala Phe Glu Leu Gly Ile Gly Phe Ala Pro Val Arg Lys Pro
      65             70             75             80

Gly Lys Leu Pro Arg Glu Val Ile Ser Ala Asp Tyr Glu Lys Glu Tyr
      85             90             95

Gly Val Asp Thr Leu Thr Met His Ala Asp Ala Ile Lys Pro Gly Gln
      100            105            110

Arg Val Leu Ile Val Asp Asp Leu Leu Ala Thr Gly Gly Thr Val Lys
      115            120            125

Ala Thr Ile Glu Met Ile Glu Lys Leu Gly Gly Val Met Ala Gly Cys
      130            135            140

Ala Phe Leu Val Glu Leu Asp Glu Leu Asn Gly Arg Glu Lys Ile Gly
      145            150            155            160

Asp Tyr Asp Tyr Lys Val Leu Met His Tyr
      165            170

```

```

<210> 242
<211> 38
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

```

```

<400> 242
gcggcgcccc atatgaattt aaaagattac attgcaac

```

<210> 243
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 243
 gcgcggatcc ataatgcata agaactttgt agtc 34

<210> 244
 <211> 22
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 244
 Gly Phe Ile Val Gly Cys Pro Val Ala Phe Glu Leu Gly Ile Gly Phe
 1 5 10 15
 Ala Pro Val Arg Lys Pro
 20

<210> 245
 <211> 13
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 245
 Gly Val Met Ala Gly Cys Ala Phe Leu Val Glu Leu Asp
 1 5 10

<210> 246
 <211> 14
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 246
 Gly Gln Arg Val Leu Ile Val Asp Asp Leu Leu Ala Thr Gly
 1 5 10

<210> 247
 <211> 744
 <212> DNA
 <213> Streptococcus pneumoniae

<400> 247
 gtgaaaatgg cgaatcccaa gtataaacgt attttaatca agttatcagg tgaagccctt 60
 gccggtgaac gtggcgtagg gattgatatc caaacagttc aaacaatcgc aaaagagatt 120
 caagaagttc atagcttagg tatcgaaatt gcccttggtta tcggtggagg aaatctctgg 180
 cgtggagaac ctgcagcaga agcaggtatg gaccgtgttc aggcagatta cacaggaatg 240
 cttgggactg ttatgaatgc tcttgtgatg gcagattcat tgcaacaagt tgggggttgat 300
 acgcgtgtac aaacagctat tgccatgcaa caagtggcag agccttatgt ccgtggacgt 360

```

gcccttcgtc accttgaaaa aggccgtatc gttatctttg gtgctggaat tggttcacct 420
tactttctcga cagatacaac agcggccctt cgtgcagctg aaatcgaagc agatgccatc 480
ctcatggcta aaaatggtgt cgatggtggt tacaatgccg atcctaagaa agataagaca 540
gctgttaagt ttgaagaatt gacccaccgt gacgttatca ataaaggtct tcgtatcatg 600
gactcaacag cttcaaccct ctcaatggac aacgacattg acttggttgt attcaacatg 660
aaccaaccag gcaacatcaa acgtgtcgta tttggtgaaa atatcggaac aacagtttca 720
aataatatcg aagaaaagga ataa 744

```

<210> 248

<211> 247

<212> PRT

<213> Streptococcus pneumoniae

<400> 248

```

Val Lys Met Ala Asn Pro Lys Tyr Lys Arg Ile Leu Ile Lys Leu Ser
  1              5              10              15

Gly Glu Ala Leu Ala Gly Glu Arg Gly Val Gly Ile Asp Ile Gln Thr
          20          25          30

Val Gln Thr Ile Ala Lys Glu Ile Gln Glu Val His Ser Leu Gly Ile
      35          40          45

Glu Ile Ala Leu Val Ile Gly Gly Gly Asn Leu Trp Arg Gly Glu Pro
      50          55          60

Ala Ala Glu Ala Gly Met Asp Arg Val Gln Ala Asp Tyr Thr Gly Met
      65          70          75          80

Leu Gly Thr Val Met Asn Ala Leu Val Met Ala Asp Ser Leu Gln Gln
          85          90          95

Val Gly Val Asp Thr Arg Val Gln Thr Ala Ile Ala Met Gln Gln Val
      100          105          110

Ala Glu Pro Tyr Val Arg Gly Arg Ala Leu Arg His Leu Glu Lys Gly
      115          120          125

Arg Ile Val Ile Phe Gly Ala Gly Ile Gly Ser Pro Tyr Phe Ser Thr
      130          135          140

Asp Thr Thr Ala Ala Leu Arg Ala Ala Glu Ile Glu Ala Asp Ala Ile
      145          150          155          160

Leu Met Ala Lys Asn Gly Val Asp Gly Val Tyr Asn Ala Asp Pro Lys
          165          170          175

Lys Asp Lys Thr Ala Val Lys Phe Glu Glu Leu Thr His Arg Asp Val
      180          185          190

Ile Asn Lys Gly Leu Arg Ile Met Asp Ser Thr Ala Ser Thr Leu Ser
      195          200          205

Met Asp Asn Asp Ile Asp Leu Val Val Phe Asn Met Asn Gln Pro Gly
      210          215          220

```


Asn Ile Lys Arg Val Val Phe Gly Glu Asn Ile Gly Thr Thr Val Ser
 225 230 235 240

Asn Asn Ile Glu Glu Lys Glu
 245

<210> 249

<211> 744

<212> DNA

<213> Streptococcus pneumoniae

<400> 249

```

gtgaaaatgg cgaatcccaa gtataaacgt attttaatca agttatcagg tgaagccctt 60
gccggtgaac gtggcgtagg gattgatatc caaacagttc aaacaatcgc aaaagagatt 120
caagaagttc atagcttagg tatcgaaatt gcccttggtt ttggtggagg aaatctctgg 180
cgtggagacc ctgcagcaga agcaggatat gaccgtgttc aggcagatta cactggaatg 240
cttgggactg ttatgaatgc tcttgtgatg gcagattcat tgcaacaagt tggggttgat 300
acgcgtgtac aaacagctat tgctatgcaa caagtggcag agccttatgt ccgtggacgt 360
gcccttcgtc accttgaaaa aggccgtatc gttatctttg gtgctggaat tgggtcacca 420
tacttctcga cagatacaac agcggccctt cgtgcagctg aaatcgaagc agatgccatc 480
ctcatggcta aaaatggcgt cgatgggtgtg tacaatgccg atcctaagaa ggacaagaca 540
gccgttaagt ttgaagaatt gacccaccgt gatgttatca acaaaggtct tcgtatcatg 600
gactcaacag cctcaaccct ctcaatggac aacgacattg acttggttgt cttcaacatg 660
aaccaatcag gcaacatcaa acgtgtcgta tttggtgaaa atatcggaac aacagtttca 720
aataatatcg aagaaaagga ataa                                     744

```

<210> 250

<211> 247

<212> PRT

<213> Streptococcus pneumoniae

<400> 250

```

Val Lys Met Ala Asn Pro Lys Tyr Lys Arg Ile Leu Ile Lys Leu Ser
  1           5           10           15

Gly Glu Ala Leu Ala Gly Glu Arg Gly Val Gly Ile Asp Ile Gln Thr
          20           25           30

Val Gln Thr Ile Ala Lys Glu Ile Gln Glu Val His Ser Leu Gly Ile
      35           40           45

Glu Ile Ala Leu Val Ile Gly Gly Gly Asn Leu Trp Arg Gly Asp Pro
      50           55           60

Ala Ala Glu Ala Gly Met Asp Arg Val Gln Ala Asp Tyr Thr Gly Met
      65           70           75           80

Leu Gly Thr Val Met Asn Ala Leu Val Met Ala Asp Ser Leu Gln Gln
          85           90           95

Val Gly Val Asp Thr Arg Val Gln Thr Ala Ile Ala Met Gln Gln Val
      100           105           110

Ala Glu Pro Tyr Val Arg Gly Arg Ala Leu Arg His Leu Glu Lys Gly
      115           120           125

```

Arg Ile Val Ile Phe Gly Ala Gly Ile Gly Ser Pro Tyr Phe Ser Thr
 130 135 140
 Asp Thr Thr Ala Ala Leu Arg Ala Ala Glu Ile Glu Ala Asp Ala Ile
 145 150 155 160
 Leu Met Ala Lys Asn Gly Val Asp Gly Val Tyr Asn Ala Asp Pro Lys
 165 170 175
 Lys Asp Lys Thr Ala Val Lys Phe Glu Glu Leu Thr His Arg Asp Val
 180 185 190
 Ile Asn Lys Gly Leu Arg Ile Met Asp Ser Thr Ala Ser Thr Leu Ser
 195 200 205
 Met Asp Asn Asp Ile Asp Leu Val Val Phe Asn Met Asn Gln Ser Gly
 210 215 220
 Asn Ile Lys Arg Val Val Phe Gly Glu Asn Ile Gly Thr Thr Val Ser
 225 230 235 240
 Asn Asn Ile Glu Glu Lys Glu
 245

<210> 251

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 251

gcggcgccc atatgaaaat ggcgaatccc aag

33

<210> 252

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 252

gcgcgatcc ttccttttct tcgatattat ttg

33

<210> 253

<211> 33

<212> DNA

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 253
 gcggcgcccc atatgaaaat ggcgaatccc aag 33

 <210> 254
 <211> 34
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 254
 gcggcgcccc atatggcgaa tcccaagtat aaac 34

 <210> 255
 <211> 42
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 255
 gcggcgcccc atatgaatcc caagtataaa cgtattttaa tc 42

 <210> 256
 <211> 36
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 256
 gcggcgcccc atatgaagta taaacgtatt ttaatc 36

 <210> 257
 <211> 38
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic primer

 <400> 257
 gcggcgcccc atatgaaacg tattttaatc aagttatc 38

<210> 258
 <211> 35
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 258
 gcggcgcccc atatgatttt aatcaagtta tcagg 35

 <210> 259
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 259
 gcggcgcccc atatgaagtt atcaggtgaa gcc 33

 <210> 260
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 260
 gcgcggatcc ttccttttct tcgatattat ttg 33

 <210> 261
 <211> 34
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 261
 gcgcggatcc tggtccgata ttttcaccaa atac 34

 <210> 262
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 262

gcgcggatcc aactgttggt ccgatatttt cac

33

<210> 263

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 263

gcgcggatcc atttgaaact gttgttccga tatttttc

37

<210> 264

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 264

gcgcggatcc gatattattt gaaactgttg ttc

33

<210> 265

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 265

gcgcggatcc attttcacca aatacgacac g

31

<210> 266

<211> 30

<212> PRT

<213> Streptococcus pneumoniae

<400> 266

Gly Ile Asp Ile Gln Thr Val Gln Thr Ile Ala Lys Glu Ile Gln Glu
1 5 10 15

Val His Ser Leu Gly Ile Glu Ile Ala Leu Val Ile Gly Gly
20 25 30

```
<210> 267
<211> 7
<212> PRT
<213> Streptococcus pneumoniae
```

```
<400> 267
Ile Asp Leu Val Val Phe Asn
  1                               5
```

```
<210> 268
<211> 37
<212> PRT
<213> Streptococcus pneumoniae
```

```
<400> 268
Val Met Asn Ala Leu Val Met Ala Asp Ser Leu Gln Gln Val Gly Val
  1             5             10             15
```

Asp Thr Arg Val Gln Thr Ala Ile Ala Met Gln Gln Val Ala Glu Pro
20 25 30

Tyr Val Arg Gly Arg
35

```
<210> 269
<211> 738
<212> DNA
<213> Pseudomonas aeruginosa
```

<400> 269						
atgggctcagc	aactgagcgc	tctgtcaacct	cgctataaac	gcattcttct	aaagttgagc	60
ggcgaagccc	tgatgggctc	ggaggagttc	ggcatatgat	ccaaggtgtc	ggaccgcgatg	120
ggcctggaaa	tcggccagtt	ggtcgggata	ggcgtgcagg	tcggcctggt	catcggcgccg	180
ggcaacctgt	tccgcggcgc	ggccctgtcc	gcggccggca	tggaccgggt	gaccggcgac	240
cacatgggga	tgctggccac	cgtgatgaac	ggcctggcga	tgcgcgatgc	gctggagcgc	300
tgaacatcc	ccgcgctggt	gatgtcggcg	atctccatgg	tcggtgtgac	cgaccactac	360
gaccgcgcga	aggccatgcy	ccacctcggc	ggtggcgagg	tggtgatctt	ctccgcgcgt	420
accggcaacc	cgttcttcac	caccgactcg	gcggcttgcc	tgcgcgccat	cgagatcgac	480
gccgacgtgg	tccttaaggc	taccaaggtc	gatggcgtgt	acatgccga	cccgttcaag	540
gaccogaatg	ccgagaagtt	cgagcgcctg	acctatgatg	aagtgtcga	ccgcaagctc	600
ggcgtgatgg	acctgacggg	catctgcctg	tgcctgacc	agaacatgcc	gctgcgggtg	660
ttcaacatga	acaagccggc	cgcattgctg	aatattgttg	ttggtggtgc	cgaaggcacc	720
cctgcagagg	agggttga					738

```
<210> 270
<211> 245
<212> PRT
<213> Pseudomonas aeruginosa
```

<400> 270

```

Met Ala Gln Gln Leu Ser Ala Arg Gln Pro Arg Tyr Lys Arg Ile Leu
 1           5           10           15

Leu Lys Leu Ser Gly Glu Ala Leu Met Gly Ser Glu Glu Phe Gly Ile
      20           25           30

Asp Pro Lys Val Leu Asp Arg Met Ala Leu Glu Ile Gly Gln Leu Val
      35           40           45

Gly Ile Gly Val Gln Val Gly Leu Val Ile Gly Gly Gly Asn Leu Phe
 50           55           60

Arg Gly Ala Ala Leu Ser Ala Ala Gly Met Asp Arg Val Thr Gly Asp
 65           70           75           80

His Met Gly Met Leu Ala Thr Val Met Asn Gly Leu Ala Met Arg Asp
      85           90           95

Ala Leu Glu Arg Ser Asn Ile Pro Ala Leu Val Met Ser Ala Ile Ser
      100          105          110

Met Val Gly Val Thr Asp His Tyr Asp Arg Arg Lys Ala Met Arg His
      115          120          125

Leu Gly Gly Gly Glu Val Val Ile Phe Ser Ala Gly Thr Gly Asn Pro
      130          135          140

Phe Phe Thr Thr Asp Ser Ala Ala Cys Leu Arg Ala Ile Glu Ile Asp
      145          150          155          160

Ala Asp Val Val Leu Lys Ala Thr Lys Val Asp Gly Val Tyr Thr Ala
      165          170          175

Asp Pro Phe Lys Asp Pro Asn Ala Glu Lys Phe Glu Arg Leu Thr Tyr
      180          185          190

Asp Glu Val Leu Asp Arg Lys Leu Gly Val Met Asp Leu Thr Ala Ile
      195          200          205

Cys Leu Cys Arg Asp Gln Asn Met Pro Leu Arg Val Phe Asn Met Asn
      210          215          220

Lys Pro Gly Ala Leu Leu Asn Ile Val Val Gly Gly Ala Glu Gly Thr
      225          230          235          240

Leu Ile Glu Glu Gly
      245

```

<210> 271

<211> 738

<212> DNA

<213> *Pseudomonas aeruginosa*

<400> 271

```

atggctcagc aactgagcgc tcgtcaacct cgctataaac gcattcttct aaagttgagc 60
ggcgaagccc tgatgggctc ggaggagttc ggcacgatc ccaaggtgct ggaccgcatg 120

```

```

gcgctggaaa tcggccagtt ggtcgggata ggcgtgcagg tcggcctggt catcggcggc 180
ggcaacctgt tccgcggcgc ggcctgtcc ggcggccggca tggaccgggt gaccggcgac 240
cacatgggga tgctggccac cgtgatgaac ggcctggcga tgcgcgatgc gctggagcgc 300
tcgaacatcc ccgcgctggt gatgtcggcg atctccatgg tcggtgtgac cgaccactac 360
gaccgcccga aggccatgcg ccacctcggc ggtggcgagg tggatgatt ctccgccggt 420
accggcaacc cgttcttcac caccgactcg gcggcttgcc tgcgcgccat cgagatcgac 480
gccgacgtgg tccttaaggc taccaaggtc gatggcgtgt aactgccga cccgttcaag 540
gaccogaatg ccgagaagtt cgagcgctg acctatgat aagtgtcga ccgcaagctc 600
ggcgtgatgg acctgaccgc catctgcctg tgccgtgacc agaacatgcc gctgcgggtg 660
ttcaacatga acaagccggg cgcattgctg aatattgttg ttggtggtgc cgaaggcacc 720
ctgatcgagg agggttga                                     738

```

<210> 272

<211> 245

<212> PRT

<213> *Pseudomonas aeruginosa*

<400> 272

```

Met Ala Gln Gln Leu Ser Ala Arg Gln Pro Arg Tyr Lys Arg Ile Leu
 1              5              10              15

Leu Lys Leu Ser Gly Glu Ala Leu Met Gly Ser Glu Glu Phe Gly Ile
      20              25              30

Asp Pro Lys Val Leu Asp Arg Met Ala Leu Glu Ile Gly Gln Leu Val
      35              40              45

Gly Ile Gly Val Gln Val Gly Leu Val Ile Gly Gly Gly Asn Leu Phe
 50              55              60

Arg Gly Ala Ala Leu Ser Ala Ala Gly Met Asp Arg Val Thr Gly Asp
 65              70              75              80

His Met Gly Met Leu Ala Thr Val Met Asn Gly Leu Ala Met Arg Asp
      85              90              95

Ala Leu Glu Arg Ser Asn Ile Pro Ala Leu Val Met Ser Ala Ile Ser
      100              105              110

Met Val Gly Val Thr Asp His Tyr Asp Arg Arg Lys Ala Met Arg His
      115              120              125

Leu Gly Gly Gly Glu Val Val Ile Phe Ser Ala Gly Thr Gly Asn Pro
      130              135              140

Phe Phe Thr Thr Asp Ser Ala Ala Cys Leu Arg Ala Ile Glu Ile Asp
      145              150              155              160

Ala Asp Val Val Leu Lys Ala Thr Lys Val Asp Gly Val Tyr Thr Ala
      165              170              175

Asp Pro Phe Lys Asp Pro Asn Ala Glu Lys Phe Glu Arg Leu Thr Tyr
      180              185              190

Asp Glu Val Leu Asp Arg Lys Leu Gly Val Met Asp Leu Thr Ala Ile
      195              200              205

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Cys Leu Cys Arg Asp Gln Asn Met Pro Leu Arg Val Phe Asn Met Asn
 210 215 220

Lys Pro Gly Ala Leu Leu Asn Ile Val Val Gly Gly Ala Glu Gly Thr
 225 230 235 240

Leu Ile Glu Glu Gly
 245

<210> 273

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 273

gcggcgccc atatggctca gcaactgagc g

31

<210> 274

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 274

gcgcggatcc accctcctcg atcaggggtg

29

<210> 275

<211> 22

<212> PRT

<213> Pseudomonas aeruginosa

<400> 275

Tyr Asp Glu Val Leu Asp Arg Lys Leu Gly Val Met Asp Leu Thr Ala
 1 5 10 15

Ile Cys Leu Cys Arg Asp
 20

<210> 276

<211> 18

<212> PRT

<213> Pseudomonas aeruginosa

<400> 276

Glu Ile Gly Gln Leu Val Gly Ile Gly Val Gln Val Gly Leu Val Ile
 1 5 10 15

<400> 277
Gly Ala Leu Leu Asn Ile Val Val Gly Gly
1 5 10

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ttaactaaga	aattagataa	agaagtgtgt	ttcgtaccat	aaacacgcgg	cgaaagcaatt	300	
gaagctgcta	ttaaagacct	taaagaaggc	gacgtattat	tagttgaaaa	tacacggtat	360	
gaagatttag	acggtaaaaa	agaatctaaa	aatgatccag	aattaggtaa	atactgggca	420	
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gcaaaagtag	ctgacaaaat	taatgtcatc	aaaaaactag	ttaacatagc	tgataaaaatt	660	
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tcattatttag	aagaagataa	aatcgacttc	gcaaaagatt	tattagaaaa	acatggtgat	780	
aaaattgtat	taccagtaga	cactaaaagtt	gctaaagaat	tttctaataa	tgccaaaatc	840	
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gcaaacctta	aagatgcaat	tacgattatc	ggtggcgggt	attcagctgc	agcagcaatc	1080	
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<400> 279
Met Ala Lys Lys Ile Val Ser Asp Leu Asp Leu Lys Gly Lys Thr Val
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Leu Val Arg Ala Asp Phe Asn Val Pro Leu Lys Asp Gly Glu Ile Thr
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Asn Asp Asn Arg Ile Val Gln Ala Leu Pro Thr Ile Gln Tyr Ile Ile
      35             40             45

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Glu	Gln	Gly	Gly	Lys	Ile	Val	Leu	Phe	Ser	His	Leu	Gly	Lys	Val	Lys		
	50					55					60						
Glu	Glu	Ser	Asp	Lys	Ala	Lys	Leu	Thr	Leu	Arg	Pro	Val	Ala	Glu	Asp		
	65				70					75					80		
Leu	Ser	Lys	Lys	Leu	Asp	Lys	Glu	Val	Val	Phe	Val	Pro	Glu	Thr	Arg		
				85					90					95			
Gly	Glu	Lys	Leu	Glu	Ala	Ala	Ile	Lys	Asp	Leu	Lys	Glu	Gly	Asp	Val		
			100					105					110				
Leu	Leu	Val	Glu	Asn	Thr	Arg	Tyr	Glu	Asp	Leu	Asp	Gly	Lys	Lys	Glu		
		115					120					125					
Ser	Lys	Asn	Asp	Pro	Glu	Leu	Gly	Lys	Tyr	Trp	Ala	Ser	Leu	Gly	Asp		
	130					135					140						
Val	Phe	Val	Asn	Asp	Ala	Phe	Gly	Thr	Ala	His	Arg	Glu	His	Ala	Ser		
	145				150					155					160		
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				165					170					175			
Asp	Lys	Glu	Ile	Lys	Phe	Ile	Gly	Gly	Val	Val	Asn	Asp	Pro	His	Lys		
			180					185					190				
Pro	Val	Val	Ala	Ile	Leu	Gly	Gly	Ala	Lys	Val	Ser	Asp	Lys	Ile	Asn		
		195					200					205					
Val	Ile	Lys	Asn	Leu	Val	Asn	Ile	Ala	Asp	Lys	Ile	Ile	Ile	Gly	Gly		
	210					215					220						
Gly	Met	Ala	Tyr	Thr	Phe	Leu	Lys	Ala	Gln	Gly	Lys	Glu	Ile	Gly	Ile		
	225				230					235					240		
Ser	Leu	Leu	Glu	Glu	Asp	Lys	Ile	Asp	Phe	Ala	Lys	Asp	Leu	Leu	Glu		
				245					250					255			
Lys	His	Gly	Asp	Lys	Ile	Val	Leu	Pro	Val	Asp	Thr	Lys	Val	Ala	Lys		
			260					265					270				
Glu	Phe	Ser	Asn	Asp	Ala	Lys	Ile	Thr	Val	Val	Pro	Ser	Asp	Ser	Ile		
		275					280					285					
Pro	Ala	Asp	Gln	Glu	Gly	Met	Asp	Ile	Gly	Pro	Asn	Thr	Val	Lys	Leu		
	290					295					300						
Phe	Ala	Asp	Glu	Leu	Glu	Gly	Ala	His	Thr	Val	Val	Trp	Asn	Gly	Pro		
	305				310					315					320		
Met	Gly	Val	Phe	Glu	Phe	Ser	Asn	Phe	Ala	Gln	Gly	Thr	Ile	Gly	Val		
				325					330					335			
Cys	Lys	Ala	Ile	Ala	Asn	Leu	Lys	Asp	Ala	Ile	Thr	Ile	Ile	Gly	Gly		
			340					345					350				

Gly Asp Ser Ala Ala Ala Ala Ile Ser Leu Gly Phe Glu Asn Asp Phe
 355 360 365

Thr His Ile Ser Thr Gly Gly Gly Ala Ser Leu Glu Tyr Leu Glu Gly
 370 375 380

Lys Glu Leu Pro Gly Ile Lys Ala Ile Asn Asn Lys
 385 390 395

<210> 280

<211> 1191

<212> DNA

<213> Staphylococcus aureus

<400> 280

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ttacctacaa ttcaatacat catcgaacaa ggtggtaaaa tcgtactatt ttcacattta 180
ggtaaaagtga aagaagaaag tgataaagca aaattaactt tacgtccagt tgctgaagac 240
ttatctaaga aattagataa agaagttggt ttcgtaccag aaacacgcgg cgaaaaactt 300
gaagctgtcta ttaaagacct taaagaaggc gacgtattat tagttgaaaa tacacgttat 360
gaagatttag acggtaaaaa agaattctaaa aatgatccag aattaggtaa atactgggca 420
tctttagggtg atgtgtttgt aaatgatgct tttggtactg cgcacgtga gcatgcatct 480
aatgttggtta tttctacaca tttagaaact gcagctggat tcttaatgga taaagaaatt 540
aagtttattg gcggcgtagt taacgatcca cataaaccag ttggtgctat tttagggtgga 600
gcaaaagtat ctgacaaaat taatgtcatc aaaaacttag ttaacatagc tgataaaaatt 660
atcatcggcg gaggtatggc ttatactttc ttaaaagcgc aaggtaaaga aattgggtatt 720
tcattattag aagaagataa aatcgacttc gcaaaagatt tattagaaaa acatgggtgat 780
aaaattgtat taccagtaga cactaaagt gctaaagaat tttctaata tgccaaaatc 840
actgtagtac catctgattc aattccagca gacccaaaag gtatggatat tggaccaaac 900
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tcttttaggtt ttgaaaatga cttcactcat atttcaactg gtggcggcgc gtcattagag 1140
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<210> 281

<211> 396

<212> PRT

<213> Staphylococcus aureus

<400> 281

Met Ala Lys Lys Ile Val Ser Asp Leu Asp Leu Lys Gly Lys Thr Val
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Leu Val Arg Ala Asp Phe Asn Val Pro Leu Lys Asp Gly Glu Ile Thr
 20 25 30

Asn Asp Asn Arg Ile Val Gln Ala Leu Pro Thr Ile Gln Tyr Ile Ile
 35 40 45

Glu Gln Gly Gly Lys Ile Val Leu Phe Ser His Leu Gly Lys Val Lys
 50 55 60

Glu Glu Ser Asp Lys Ala Lys Leu Thr Leu Arg Pro Val Ala Glu Asp
 65 70 75 80

Leu Ser Lys Lys Leu Asp Lys Glu Val Val Phe Val Pro Glu Thr Arg
 85 90 95
 Gly Glu Lys Leu Glu Ala Ala Ile Lys Asp Leu Lys Glu Gly Asp Val
 100 105 110
 Leu Leu Val Glu Asn Thr Arg Tyr Glu Asp Leu Asp Gly Lys Lys Glu
 115 120 125
 Ser Lys Asn Asp Pro Glu Leu Gly Lys Tyr Trp Ala Ser Leu Gly Asp
 130 135 140
 Val Phe Val Asn Asp Ala Phe Gly Thr Ala His Arg Glu His Ala Ser
 145 150 155 160
 Asn Val Gly Ile Ser Thr His Leu Glu Thr Ala Ala Gly Phe Leu Met
 165 170 175
 Asp Lys Glu Ile Lys Phe Ile Gly Gly Val Val Asn Asp Pro His Lys
 180 185 190
 Pro Val Val Ala Ile Leu Gly Gly Ala Lys Val Ser Asp Lys Ile Asn
 195 200 205
 Val Ile Lys Asn Leu Val Asn Ile Ala Asp Lys Ile Ile Ile Gly Gly
 210 215 220
 Gly Met Ala Tyr Thr Phe Leu Lys Ala Gln Gly Lys Glu Ile Gly Ile
 225 230 235 240
 Ser Leu Leu Glu Glu Asp Lys Ile Asp Phe Ala Lys Asp Leu Leu Glu
 245 250 255
 Lys His Gly Asp Lys Ile Val Leu Pro Val Asp Thr Lys Val Ala Lys
 260 265 270
 Glu Phe Ser Asn Asp Ala Lys Ile Thr Val Val Pro Ser Asp Ser Ile
 275 280 285
 Pro Ala Asp Gln Lys Gly Met Asp Ile Gly Pro Asn Thr Val Lys Leu
 290 295 300
 Phe Ala Asp Glu Leu Glu Gly Ala His Thr Val Val Trp Asn Gly Pro
 305 310 315 320
 Met Gly Val Phe Glu Phe Ser Asn Phe Ala Gln Gly Thr Ile Gly Val
 325 330 335
 Cys Lys Ala Ile Ala Asn Leu Lys Asp Ala Ile Thr Ile Ile Gly Gly
 340 345 350
 Gly Asp Ser Ala Ala Ala Ala Ile Ser Leu Gly Phe Glu Asn Asp Phe
 355 360 365
 Thr His Ile Ser Thr Gly Gly Gly Ala Ser Leu Glu Tyr Leu Glu Gly
 370 375 380

Lys Glu Leu Pro Gly Ile Lys Ala Ile Asn Asn Lys
 385 390 395

<210> 282

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 282

gcggcgcccc atatggctaa aaaaattggt tctgatttag

40

<210> 283

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 283

gcgcggatcc tttcttagat aagtcttcag caac

34

<210> 284

<211> 12

<212> PRT

<213> Staphylococcus aureus

<400> 284

Gly Lys Ile Val Leu Phe Ser His Leu Gly Lys Val
 1 5 10

<210> 285

<211> 40

<212> PRT

<213> Staphylococcus aureus

<400> 285

Ile Gly Gly Val Val Asn Asp Pro His Lys Pro Val Val Ala Ile Leu
 1 5 10 15

Gly Gly Ala Lys Val Ser Asp Lys Ile Asn Val Ile Lys Asn Leu Val
 20 25 30

Asn Ile Ala Asp Lys Ile Ile Ile
 35 40

<210> 286
 <211> 9
 <212> PRT
 <213> *Staphylococcus aureus*

<400> 286
 Asp Lys Glu Val Val Phe Val Pro Glu
 1 5

<210> 287
 <211> 1293
 <212> DNA
 <213> *Escherichia coli*

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 gctgcctata aaaccctga actgggtgcgt cgtttgcgcg atcgcggggc cgacgtccgc 180
 gtagccatga ccgaagcggc aaaagccttt atcacccac ttagcttgca ggcggtttct 240
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 cgtgttgctg ccggaatggc gaatgacctg gtatcgacga tttgtctggc tacacctgcg 420
 cctgtagccg tgctccccgc catgaaccag cagatgtacc gtgccgctgc caccgagcat 480
 aatttagagg tgcttgcttc ccgtgggttg ctcattctgg ggccagacag tggcagtcag 540
 gcttggtggtg atatcggtcc tgggcgaatg ctcgatccgt taaccattgt ggatatggcg 600
 gtagcgcat tttcgcccg caacgacctg aaacatctga acattatgat taccgcccgc 660
 ccgacgcgtg aaccgctcga tccggtgcgt tatatctcta atcacagctc cggcaagatg 720
 ggttttgcta tcgccgccgc cgctgcccgt cgtggcgcg aagtcacgct ggtatcaggt 780
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 tacgcccggc aaaaacgtat ccgtaaaaaac cttgatctga tctgcgcgaa cgatgtttcc 1140
 cagccaactc aaggatttaa cagcgacaac aacgcattac accttttctg gcaggacgga 1200
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<210> 288
 <211> 430
 <212> PRT
 <213> *Escherichia coli*

<400> 288
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 Cys His Pro Thr Gly Lys Ile Ile Met Ser Leu Ala Gly Lys Lys Ile
 20 25 30
 Val Leu Gly Val Ser Gly Gly Ile Ala Ala Tyr Lys Thr Pro Glu Leu
 35 40 45
 Val Arg Arg Leu Arg Asp Arg Gly Ala Asp Val Arg Val Ala Met Thr
 50 55 60

Glu	Ala	Ala	Lys	Ala	Phe	Ile	Thr	Pro	Leu	Ser	Leu	Gln	Ala	Val	Ser	
65					70					75					80	
Gly	Tyr	Pro	Val	Ser	Asp	Ser	Leu	Leu	Asp	Pro	Ala	Ala	Glu	Ala	Ala	
				85					90					95		
Met	Gly	His	Ile	Glu	Leu	Gly	Lys	Trp	Ala	Asp	Leu	Val	Ile	Leu	Ala	
			100					105					110			
Pro	Ala	Thr	Ala	Asp	Leu	Ile	Ala	Arg	Val	Ala	Ala	Gly	Met	Ala	Asn	
		115					120					125				
Asp	Leu	Val	Ser	Thr	Ile	Cys	Leu	Ala	Thr	Pro	Ala	Pro	Val	Ala	Val	
	130					135					140					
Leu	Pro	Ala	Met	Asn	Gln	Gln	Met	Tyr	Arg	Ala	Ala	Ala	Thr	Gln	His	
145					150					155					160	
Asn	Leu	Glu	Val	Leu	Ala	Ser	Arg	Gly	Leu	Leu	Ile	Trp	Gly	Pro	Asp	
				165					170					175		
Ser	Gly	Ser	Gln	Ala	Cys	Gly	Asp	Ile	Gly	Pro	Gly	Arg	Met	Leu	Asp	
			180					185					190			
Pro	Leu	Thr	Ile	Val	Asp	Met	Ala	Val	Ala	His	Phe	Ser	Pro	Val	Asn	
		195					200					205				
Asp	Leu	Lys	His	Leu	Asn	Ile	Met	Ile	Thr	Ala	Gly	Pro	Thr	Arg	Glu	
	210					215					220					
Pro	Leu	Asp	Pro	Val	Arg	Tyr	Ile	Ser	Asn	His	Ser	Ser	Gly	Lys	Met	
225					230					235					240	
Gly	Phe	Ala	Ile	Ala	Ala	Ala	Ala	Ala	Arg	Arg	Gly	Ala	Asn	Val	Thr	
				245					250					255		
Leu	Val	Ser	Gly	Pro	Val	Ser	Leu	Pro	Thr	Pro	Pro	Phe	Val	Lys	Arg	
			260					265					270			
Val	Asp	Val	Met	Thr	Ala	Leu	Glu	Met	Glu	Ala	Ala	Val	Asn	Ala	Ser	
		275					280					285				
Val	Gln	Gln	Gln	Asn	Ile	Phe	Ile	Gly	Cys	Ala	Ala	Val	Ala	Asp	Tyr	
	290					295					300					
Arg	Ala	Ala	Thr	Val	Ala	Pro	Glu	Lys	Ile	Lys	Lys	Gln	Ala	Thr	Gln	
305					310					315					320	
Gly	Asp	Glu	Leu	Thr	Ile	Lys	Met	Val	Lys	Asn	Pro	Asp	Ile	Val	Ala	
				325					330					335		
Gly	Val	Ala	Ala	Leu	Lys	Asp	His	Arg	Pro	Tyr	Val	Val	Gly	Phe	Ala	
			340					345					350			
Ala	Glu	Thr	Asn	Asn	Val	Glu	Glu	Tyr	Ala	Arg	Gln	Lys	Arg	Ile	Arg	
		355					360					365				

Lys Asn Leu Asp Leu Ile Cys Ala Asn Asp Val Ser Gln Pro Thr Gln
370 375 380

Gly Phe Asn Ser Asp Asn Asn Ala Leu His Leu Phe Trp Gln Asp Gly
385 390 395 400

Asp Lys Val Leu Pro Leu Glu Arg Lys Glu Leu Leu Gly Gln Leu Leu
405 410 415

Leu Asp Glu Ile Val Thr Arg Tyr Asp Glu Lys Asn Arg Arg
420 425 430

<210> 289

<211> 1293

<212> DNA

<213> Escherichia coli

<400> 289

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gctgcctata aaaccctga actggtgcgt cgtttgcgcg atcgcggggc cgacgtccgc 180
gtagccatga ccgaagcggc aaaagccttt atcacccac ttagcttgca ggcggtttct 240
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gagctgggta aatgggctga tttagtatt ctcgcccctg ccacggcaga tttgattgcc 360
cgtgttgctg ccggaatggc gaatgacctg gtatcgacga tttgtctggc tacacctgcg 420
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ccgacgcgtg aaccgctcga tccggtgcgt tatatctcta atcacagctc cggcaagatg 720
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tacgcccggc aaaaacgtat ccgtaaaaaac cttgatctga tctgcgcgaa cgatgtttcc 1140
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gtgaccctgt atgatgaaaa aaatcgacgt taa 1293
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<210> 290

<211> 430

<212> PRT

<213> Escherichia coli

<400> 290

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20 25 30

Val Leu Gly Val Ser Gly Gly Ile Ala Ala Tyr Lys Thr Pro Glu Leu
35 40 45

Val 50	Arg	Arg	Leu	Arg	Asp	Arg 55	Gly	Ala	Asp	Val	Arg 60	Val	Ala	Met	Thr
Glu 65	Ala	Ala	Lys	Ala	Phe 70	Ile	Thr	Pro	Leu	Ser 75	Leu	Gln	Ala	Val	Ser 80
Gly	Tyr	Pro	Val	Ser 85	Asp	Ser	Leu	Leu	Asp 90	Pro	Ala	Ala	Glu	Ala	Ala 95
Met	Gly	His	Ile 100	Glu	Leu	Gly	Lys	Trp 105	Ala	Asp	Leu	Val	Ile 110	Leu	Ala 115
Pro	Ala	Thr 115	Ala	Asp	Leu	Ile	Ala 120	Arg	Val	Ala	Ala	Gly 125	Met	Ala	Asn 130
Asp 130	Leu	Val	Ser	Thr	Ile	Cys 135	Leu	Ala	Thr	Pro	Ala 140	Pro	Val	Ala	Val 145
Leu 145	Pro	Ala	Met	Asn 150	Gln	Gln	Met	Tyr	Arg	Ala 155	Ala	Ala	Thr	Gln	His 160
Asn	Leu	Glu	Val	Leu 165	Ala	Ser	Arg	Gly	Leu 170	Leu	Ile	Trp	Gly	Pro 175	Asp 180
Ser	Gly	Ser	Gln 180	Ala	Cys	Gly	Asp 185	Ile	Gly	Pro	Gly	Arg	Met 190	Leu	Asp 195
Pro	Leu	Thr 195	Ile	Val	Asp	Met	Ala 200	Val	Ala	His	Phe 205	Ser	Pro	Val	Asn 210
Asp 210	Leu	Lys	His	Leu	Asn 215	Ile	Met	Ile	Thr	Ala	Gly 220	Pro	Thr	Arg	Glu 225
Pro 225	Leu	Asp	Pro	Val	Arg 230	Tyr	Ile	Ser	Asn	His 235	Ser	Ser	Gly	Lys	Met 240
Gly	Phe	Ala	Ile	Ala 245	Ala	Ala	Ala	Ala	Arg 250	Arg	Gly	Ala	Asn	Val	Thr 255
Leu	Val	Ser	Gly 260	Pro	Val	Ser	Leu	Pro 265	Thr	Pro	Pro	Phe	Val 270	Lys	Arg 275
Val	Asp	Val 275	Met	Thr	Ala	Leu	Glu 280	Met	Glu	Ala	Ala	Val 285	Asn	Ala	Ser 290
Val 290	Gln	Gln	Gln	Asn	Ile	Phe 295	Ile	Gly	Cys	Ala	Ala 300	Val	Ala	Asp	Tyr 305
Arg 305	Ala	Ala	Thr	Val	Ala 310	Pro	Glu	Lys	Ile	Lys 315	Lys	Gln	Ala	Thr	Gln 320
Gly	Asp	Glu	Leu	Thr 325	Ile	Lys	Met	Val	Lys 330	Asn	Pro	Asp	Ile	Val	Ala 335
Gly	Val	Ala	Ala 340	Leu	Lys	Asp	His 345	Arg	Pro	Tyr	Val	Val	Gly 350	Phe	Ala 355

Ala Glu Thr Asn Asn Val Glu Glu Tyr Ala Arg Gln Lys Arg Ile Arg
 355 360 365

Lys Asn Leu Asp Leu Ile Cys Ala Asn Asp Val Ser Gln Pro Thr Gln
 370 375 380

Gly Phe Asn Ser Asp Asn Asn Ala Leu His Leu Phe Trp Gln Asp Gly
 385 390 395 400

Asp Lys Val Leu Pro Leu Glu Arg Lys Glu Leu Leu Gly Gln Leu Leu
 405 410 415

Leu Asp Glu Ile Val Thr Arg Tyr Asp Glu Lys Asn Arg Arg
 420 425 430

<210> 291

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 291

gcggcgcccc atatgaaggc acgacaacaa aag

33

<210> 292

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 292

gcgcggatcc aacgggataa ccagaaaccg

30

<210> 293

<211> 21

<212> PRT

<213> Escherichia coli

<400> 293

Asn Asp Leu Val Ser Thr Ile Cys Leu Ala Thr Pro Ala Pro Val Ala
 1 5 10 15

Val Leu Pro Ala Met
 20

<210> 294
 <211> 21
 <212> PRT
 <213> Escherichia coli

<400> 294
 Trp Ala Asp Leu Val Ile Leu Ala Pro Ala Thr Ala Asp Leu Ile Ala
 1 5 10 15
 Arg Val Ala Ala Gly
 20

<210> 295
 <211> 13
 <212> PRT
 <213> Escherichia coli

<400> 295
 Leu Leu Gly Gln Leu Leu Leu Asp Glu Ile Val Thr Arg
 1 5 10

<210> 296
 <211> 972
 <212> DNA
 <213> Staphylococcus aureus

<400> 296
 atgaaagtca tagaagtgac acatcctata caatctaaac agtatattac agaggatggt 60
 gcaatggcat tcggatTTTT cgatggcatg cataaaggct atgacaaaagt ctttgatata 120
 ttaaacgaaa tagctgaggc acgcagttta aaaaaagcgg tgatgacatt tgatccgcat 180
 ccgtctgtcg tgttgaatcc taaaagaaaa cgaacaacgt atttaacgcc actttcagat 240
 aaaatcgaaa aaattagcca acatgatatt gattattgta tagtgggttaa tttttcatct 300
 aggtttgcta atgtgagcgt agaagatttt gttgaaaatt atataattaa aaataatgta 360
 aaagaagtca ttgctggttt tgattttact tttggtaaatt ttggaaaagg taatatgact 420
 gtacttcaag aatatgatgc gtttaatacg acaattgtga gtaaacaaga aattgaaaaat 480
 gaaaaaattt ctacaacttc tattcgtcaa gatttaataca atggtgagtt gcaaaaagcg 540
 aatgatgctt taggctatat atattctatt aaaggcactg tagtgcaagg tgaaaaaagg 600
 ggaagaacta ttggcttccc aacagctaac attcaaccta gtgatgatta tttgttacct 660
 cgtaaagggtg tttatgctgt tagtattgaa atcggcactg aaaataaatt atatcgaggg 720
 gtagctaaca taggtgtaaa gccaacattt catgaccta acaaagcaga agttgtcatc 780
 gaagtgaata tctttgactt tgaggataat atttatgggtg aacgagtgac cgtgaattgg 840
 catcatttct tacgtcctga gattaaattt gatgggtatcg acccattagt taaacaaatg 900
 aacgatgata aatcgcggtgc taaatattta ttagcagttg attttgggtga tgaagtagct 960
 tataatatct ag 972

<210> 297
 <211> 323
 <212> PRT
 <213> Staphylococcus aureus

<400> 297
 Met Lys Val Ile Glu Val Thr His Pro Ile Gln Ser Lys Gln Tyr Ile
 1 5 10 15

[illegible]

<210> 298
 <211> 972
 <212> DNA
 <213> *Staphylococcus aureus*

<400> 298
 atgaaagtca tagaagtgac acatcctata caatctaaac agtatattac agaggatggt 60
 gcaatggcat tcgattttt cgatggcatg cataaaggct atgacaaagt ctttgatata 120
 ttaaacgaaa tagctgaggc acgcagttta aaaaaagcgg tgatgacatt tgatccgcat 180
 ccgtctgtcg tgttgaatcc taaaagaaaa cgaacaacgt atttaacgcc actttcagat 240
 aaaatcgaaa aaattagcca acatgatatt gattattgta tagtgggttaa tttttcatct 300
 aggtttgcta atgtgagcgt agaagatttt gttgaaaatt atataattaa aaataatgta 360
 aaagaagtca ttgctgggtt tgattttact tttggtaaatt ttggaaaagg taatatgact 420
 gtacttcaag aatatgatgc gtttaatacgc acaattgtga gtaaacaaga aattgaaaaat 480
 gaaaaaattt ctacaacttc tattcgtcaa gatttaataca atggtgagtt gcaaaaagcg 540
 aatgatgctt taggctatat atattctatt aaaggcactg tagtgcaagg tgaaaaaagg 600
 ggaagaacta ttggcttccc aacagctaac attcaaccta gtgatgatta tttgttacct 660
 cgtaaagggtg tttatgctgt tagtattgaa atcggcactg aaaaataaatt atacgagggg 720
 gtagctaaca taggtgtaaa gccaacattt catgatccta acaaagcaga agttgtcatc 780
 gaagtgaata tctttgactt tgaggataat atttatgggtg aacgagtgac cgtgaattgg 840
 catcatttct tacgtcctga gattaaattt gatggatcg acccattagt taaacaaatg 900
 aacgatgata aatcgcggtgc taaatattta ttagcagttg attttggtga tgaagtagct 960
 tataatatct ag 972

<210> 299
 <211> 323
 <212> PRT
 <213> *Staphylococcus aureus*

<400> 299
 Met Lys Val Ile Glu Val Thr His Pro Ile Gln Ser Lys Gln Tyr Ile
 1 5 10 15
 Thr Glu Asp Val Ala Met Ala Phe Gly Phe Phe Asp Gly Met His Lys
 20 25 30
 Gly His Asp Lys Val Phe Asp Ile Leu Asn Glu Ile Ala Glu Ala Arg
 35 40 45
 Ser Leu Lys Lys Ala Val Met Thr Phe Asp Pro His Pro Ser Val Val
 50 55 60
 Leu Asn Pro Lys Arg Lys Arg Thr Thr Tyr Leu Thr Pro Leu Ser Asp
 65 70 75 80
 Lys Ile Glu Lys Ile Ser Gln His Asp Ile Asp Tyr Cys Ile Val Val
 85 90 95
 Asn Phe Ser Ser Arg Phe Ala Asn Val Ser Val Glu Asp Phe Val Glu
 100 105 110
 Asn Tyr Ile Ile Lys Asn Asn Val Lys Glu Val Ile Ala Gly Phe Asp
 115 120 125

Phe Thr Phe Gly Lys Phe Gly Lys Gly Asn Met Thr Val Leu Gln Glu
 130 135 140
 Tyr Asp Ala Phe Asn Thr Thr Ile Val Ser Lys Gln Glu Ile Glu Asn
 145 150 155 160
 Glu Lys Ile Ser Thr Thr Ser Ile Arg Gln Asp Leu Ile Asn Gly Glu
 165 170 175
 Leu Gln Lys Ala Asn Asp Ala Leu Gly Tyr Ile Tyr Ser Ile Lys Gly
 180 185 190
 Thr Val Val Gln Gly Glu Lys Arg Gly Arg Thr Ile Gly Phe Pro Thr
 195 200 205
 Ala Asn Ile Gln Pro Ser Asp Asp Tyr Leu Leu Pro Arg Lys Gly Val
 210 215 220
 Tyr Ala Val Ser Ile Glu Ile Gly Thr Glu Asn Lys Leu Tyr Arg Gly
 225 230 235 240
 Val Ala Asn Ile Gly Val Lys Pro Thr Phe His Asp Pro Asn Lys Ala
 245 250 255
 Glu Val Val Ile Glu Val Asn Ile Phe Asp Phe Glu Asp Asn Ile Tyr
 260 265 270
 Gly Glu Arg Val Thr Val Asn Trp His His Phe Leu Arg Pro Glu Ile
 275 280 285
 Lys Phe Asp Gly Ile Asp Pro Leu Val Lys Gln Met Asn Asp Asp Lys
 290 295 300
 Ser Arg Ala Lys Tyr Leu Leu Ala Val Asp Phe Gly Asp Glu Val Ala
 305 310 315 320
 Tyr Asn Ile

<210> 300

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 300

gcggcgcccc atatgaaagt catagaagtg acac

34

<210> 301

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 301

gcgcggatcc tttttcgatt ttatctgaaa gtg

33

<210> 302

<211> 13

<212> PRT

<213> Staphylococcus aureus

<400> 302

Gln His Asp Ile Asp Tyr Cys Ile Val Val Asn Phe Ser

1

5

10

<210> 303

<211> 9

<212> PRT

<213> Staphylococcus aureus

<400> 303

Pro His Pro Ser Val Val Leu Asn Pro

1

5

<210> 304

<211> 8

<212> PRT

<213> Staphylococcus aureus

<400> 304

Ala Lys Tyr Leu Leu Ala Val Asp

1

5

<210> 305

<211> 480

<212> DNA

<213> Pseudomonas aeruginosa

<400> 305

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atgaaccgag tgctgtaccc aggcaccttc gatcccatca ccaaggggtca cggcgatctg 60
atcgaacgtg cttcacggct ttctgaccat gtgatcatcg cggtcgccgc cagccccaag 120
aagaaccccc tgttcagcct ggaacagcgg gttgcgctgg ccaggagggt caccaagcac 180
ctgccgaacg tcgaggtggt gggcttctcc accctgctgg cgcacttcgt caaggagcag 240
aaggcgaatg tcttcctccg cggcctgcgc gcggtttccg acttcgagta cgagttccag 300
ctggccaaca tgaaccgcca gctcgccccc gacgtggaaa gcatgttcct caccocgtcg 360
gagaagtatt ccttcatttc ctgcacgctg gtccgggaaa tcgccgctct cggcggggat 420
atcagcaagt tcgtgcatcc ggccgtggca gacgccctgg cggaacgttt caagcgctga 480

```

<210> 306

<211> 159

<212> PRT

<213> Pseudomonas aeruginosa

<400> 306

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Met Asn Arg Val Leu Tyr Pro Gly Thr Phe Asp Pro Ile Thr Lys Gly
 1           5           10           15

His Gly Asp Leu Ile Glu Arg Ala Ser Arg Leu Phe Asp His Val Ile
 20           25           30

Ile Ala Val Ala Ala Ser Pro Lys Lys Asn Pro Leu Phe Ser Leu Glu
 35           40           45

Gln Arg Val Ala Leu Ala Gln Glu Val Thr Lys His Leu Pro Asn Val
 50           55           60

Glu Val Val Gly Phe Ser Thr Leu Leu Ala His Phe Val Lys Glu Gln
 65           70           75           80

Lys Ala Asn Val Phe Leu Arg Gly Leu Arg Ala Val Ser Asp Phe Glu
 85           90           95

Tyr Glu Phe Gln Leu Ala Asn Met Asn Arg Gln Leu Ala Pro Asp Val
100          105          110

Glu Ser Met Phe Leu Thr Pro Ser Glu Lys Tyr Ser Phe Ile Ser Ser
115          120          125

Thr Leu Val Arg Glu Ile Ala Ala Leu Gly Gly Asp Ile Ser Lys Phe
130          135          140

Val His Pro Ala Val Ala Asp Ala Leu Ala Glu Arg Phe Lys Arg
145          150          155

```

<210> 307

<211> 480

<212> DNA

<213> *Pseudomonas aeruginosa*

<400> 307

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atgaaccgag tgctgtaccc aggcaccttc gatcccatca ccaaggggtca cggcgatctg 60
atcgaacgtg cttcacggct ttctgacccat gtgatcatcg cggtcgccgc cagccccaag 120
aagaaccccc tggtcagcct ggaacagcgg gtggcgctgg ccaggaggt caccaagcac 180
ctgccgaacg tcgaggtggg gggcttctcc accctgctgg cgcacttcgt caaggagcag 240
aaggcgaatg tcttcctccg cggcctgcgc gcggtttccg acttcgagta cgagttccag 300
ctggccaaca tgaaccgcca gctcgccccc gacgtggaaa gcatgttcct caccctgtcg 360
gagaagtatt cttcatttc ctgcacgctg gtccgggaaa tcgccgctct cggcggggat 420
atcagcaagt tcgtgcatcc ggccgtggca gacgccctgg cggaacgttt caagcgctga 480

```

<210> 308

<211> 159

<212> PRT

<213> *Pseudomonas aeruginosa*

<400> 308

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Met Asn Arg Val Leu Tyr Pro Gly Thr Phe Asp Pro Ile Thr Lys Gly
 1           5           10           15

```

His Gly Asp Leu Ile Glu Arg Ala Ser Arg Leu Phe Asp His Val Ile
 20 25 30
 Ile Ala Val Ala Ala Ser Pro Lys Lys Asn Pro Leu Phe Ser Leu Glu
 35 40 45
 Gln Arg Val Ala Leu Ala Gln Glu Val Thr Lys His Leu Pro Asn Val
 50 55 60
 Glu Val Val Gly Phe Ser Thr Leu Leu Ala His Phe Val Lys Glu Gln
 65 70 75 80
 Lys Ala Asn Val Phe Leu Arg Gly Leu Arg Ala Val Ser Asp Phe Glu
 85 90 95
 Tyr Glu Phe Gln Leu Ala Asn Met Asn Arg Gln Leu Ala Pro Asp Val
 100 105 110
 Glu Ser Met Phe Leu Thr Pro Ser Glu Lys Tyr Ser Phe Ile Ser Ser
 115 120 125
 Thr Leu Val Arg Glu Ile Ala Ala Leu Gly Gly Asp Ile Ser Lys Phe
 130 135 140
 Val His Pro Ala Val Ala Asp Ala Leu Ala Glu Arg Phe Lys Arg
 145 150 155

<210> 309

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 309

gcggcgggccc atatgaaccg agtgctgtac c

31

<210> 310

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 310

gcgcgggatcc gcgcttgaaa cgttccgc

28

<210> 311

<211> 17

<212> PRT

<213> Pseudomonas aeruginosa

<400> 311

Glu Arg Ala Ser Arg Leu Phe Asp His Val Ile Ile Ala Val Ala Ala
 1 5 10 15

Ser

<210> 312

<211> 14

<212> PRT

<213> Pseudomonas aeruginosa

<400> 312

Ser Lys Phe Val His Pro Ala Val Ala Asp Ala Leu Ala Glu
 1 5 10

<210> 313

<211> 39

<212> PRT

<213> Pseudomonas aeruginosa

<400> 313

Lys Asn Pro Leu Phe Ser Leu Glu Gln Arg Val Ala Leu Ala Gln Glu
 1 5 10 15

Val Thr Lys His Leu Pro Asn Val Glu Val Val Gly Phe Ser Thr Leu
 20 25 30

Leu Ala His Phe Val Lys Glu
 35

<210> 314

<211> 1083

<212> DNA

<213> Pseudomonas aeruginosa

<400> 314

atgaaagctt ctctgctgaa aaagctggat gtcctcagcg atcgctacga agaactgacg 60
 gcgctgctcg gcgacgccga ggtgatcagt gaccagaccc gcttccgcgc ctattcccgc 120
 gagtacgccg aggtcgaacc ggtgatcctg gcgttccgcg actaccgcaa ggtgcaggcc 180
 gacctcgagg gcgcccaggc gttgctcaag gacagcgacc cggagttgcg cgacctcgcc 240
 gaggaggagg tcgccgaagc gcgcggccgc ctcgccgcc tcggcgacag cctgcagcgc 300
 atgctgctgc cgaaggatcc caacgacagc cgcaacgtgt tcctggagat ccgtgccggc 360
 accggtggcg acgaggcggc gatcttctcc ggcgacctgt tccgcatgta ttcgcgctac 420
 gccgagcgcc agggctggcg gatcgagacg ctgtcggaga acgagggcga gcacggtggc 480
 tacaaggaag tgattgcccc ggtcgagggc gacaacgtct acgccaagct caagtccgag 540
 tccggcgcgc accgcgtgca gcgggtgccg gaaaccgaat cccagggccg gatccacact 600
 tccgcctgca ccgtcgcggt gctgccggag ccggacgagc aggcagcgat cgagatcaac 660
 ccggccgacc tcgggtgga cacctaccgt tcctccgggt cggcgggcca gcacgtcaac 720
 aagaccgact cggcggtgcg catcaccac attcccagcg gcatcggtgt cgagtgccag 780
 gaagagcgct cgcagcaca gaaccgcgc aaggccatgg cctggctggc ggccaagctc 840
 aacgaccagc agcaggccgc ggcgcagcag gcgatcgcca gcacgcgcaa gctgctggtg 900
 ggctcggggc accgctcgga gcgcattcgt acctacaact tcccgcagg gcgggtcacc 960
 gaccatcgca tcaacctcac cctgtactcc ctgggcgagg tgatggagg gcgggtggaa 1020

caggtgatcg agccgctgct gcaggaatac caggccgatc aactggcggc cctggggcgac 1080
tga 1083

<210> 315

<211> 360

<212> PRT

<213> *Pseudomonas aeruginosa*

<400> 315

Met Lys Ala Ser Leu Leu Lys Lys Leu Asp Val Leu Ser Asp Arg Tyr
1 5 10 15

Glu Glu Leu Thr Ala Leu Leu Gly Asp Ala Glu Val Ile Ser Asp Gln
20 25 30

Thr Arg Phe Arg Ala Tyr Ser Arg Glu Tyr Ala Glu Val Glu Pro Val
35 40 45

Ile Leu Ala Phe Arg Asp Tyr Arg Lys Val Gln Ala Asp Leu Glu Gly
50 55 60

Ala Gln Ala Leu Leu Lys Asp Ser Asp Pro Glu Leu Arg Asp Leu Ala
65 70 75 80

Glu Glu Glu Val Ala Glu Ala Arg Gly Arg Leu Ala Ala Leu Gly Asp
85 90 95

Ser Leu Gln Arg Met Leu Leu Pro Lys Asp Pro Asn Asp Ser Arg Asn
100 105 110

Val Phe Leu Glu Ile Arg Ala Gly Thr Gly Gly Asp Glu Ala Ala Ile
115 120 125

Phe Ser Gly Asp Leu Phe Arg Met Tyr Ser Arg Tyr Ala Glu Arg Gln
130 135 140

Gly Trp Arg Ile Glu Thr Leu Ser Glu Asn Glu Gly Glu His Gly Gly
145 150 155 160

Tyr Lys Glu Val Ile Ala Arg Val Glu Gly Asp Asn Val Tyr Ala Lys
165 170 175

Leu Lys Phe Glu Ser Gly Ala His Arg Val Gln Arg Val Pro Glu Thr
180 185 190

Glu Ser Gln Gly Arg Ile His Thr Ser Ala Cys Thr Val Ala Val Leu
195 200 205

Pro Glu Pro Asp Glu Gln Ala Ala Ile Glu Ile Asn Pro Ala Asp Leu
210 215 220

Arg Val Asp Thr Tyr Arg Ser Ser Gly Ala Gly Gly Gln His Val Asn
225 230 235 240

Lys Thr Asp Ser Ala Val Arg Ile Thr His Ile Pro Ser Gly Ile Val
245 250 255

Val Glu Cys Gln Glu Glu Arg Ser Gln His Lys Asn Arg Ala Lys Ala
260 265 270

Met Ala Trp Leu Ala Ala Lys Leu Asn Asp Gln Gln Gln Ala Ala Ala
275 280 285

Gln Gln Ala Ile Ala Ser Thr Arg Lys Leu Leu Val Gly Ser Gly Asp
290 295 300

Arg Ser Glu Arg Ile Arg Thr Tyr Asn Phe Pro Gln Gly Arg Val Thr
305 310 315 320

Asp His Arg Ile Asn Leu Thr Leu Tyr Ser Leu Gly Glu Val Met Glu
325 330 335

Gly Ala Val Glu Gln Val Ile Glu Pro Leu Leu Gln Glu Tyr Gln Ala
340 345 350

Asp Gln Leu Ala Ala Leu Gly Asp
355 360

<210> 316

<211> 1083

<212> DNA

<213> *Pseudomonas aeruginosa*

<400> 316

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atgaaagctt ctctgctgaa aaagctggat gtctctcagcg atcgctacga agaactgacg 60
gcgctgctcg gcgacgccga ggtgatcagt gaccagaccc gcttccgcgc ctattcccgc 120
gagtacgccg aggtcgaacc gttgatcctg gagttccgcg actaccgcaa ggtgcaggcc 180
gacctcgagg gcgcccaggc gttgctcaag gacagcgacc cggagttgcg cgacctcgcc 240
gaggaggagg tcgccgaagc gcgcggccgc ctgcgcgccc tcggcgacag cctgcagcgc 300
atgctgctgc cgaaggatcc caacgacagc cgcaacgtgt tcctggagat ccgtgccggc 360
accggtggcg acgaggcggc gatcttctcc ggcgacctgt tccgcatgta ttcgcgctac 420
gccgagcgcc agggctggcg gatcgagacg ctgtcggaga acgaggcgca gcacggtggc 480
tacaaggaag tgattgcccg ggtcgagggc gacaacgtct acgccaagct caagtccgag 540
tccggcgcgc accgcgtgca gcgggtgccc gaaaccgaat cccagggccc gatccacact 600
tccgcctgca ccgtcgcggt gctgccggag ccggacgagc aggcagcgat cgagatcaac 660
ccggccgacc tgcgggtgga cacctaccgt tcctccgggt ccggcgggcca gcacgtcaac 720
aagaccgact cggcggtgcg catcacccac attcccagcg gcatcggtgt cgagtccag 780
gaagagcgct cgcagcacia gaaccgcgcc aaggccatgg cctggctggc ggccaagctc 840
aacgaccagc agcaggccgc ggcgcagcag gcgatcgcca gcacgcgcaa gctgctggtg 900
ggctcgggcg tccgctcgga gcgcatccgt acctacaact tcccgcaagg gcgggtcacc 960
gaccatcgca tcaacctcac cctgtactcc ctgggcgagg tgatggaggg cgcggtggaa 1020
caggtgatcg agccgctgct gcaggaatac caggccgatc aactggcggc cctgggcgac 1080
tga 1083
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<210> 317

<211> 360

<212> PRT

<213> *Pseudomonas aeruginosa*

<400> 317

Met Lys Ala Ser Leu Leu Lys Lys Leu Asp Val Leu Ser Asp Arg Tyr
1 5 10 15

Glu	Glu	Leu	Thr	Ala	Leu	Leu	Gly	Asp	Ala	Glu	Val	Ile	Ser	Asp	Gln	
			20					25					30			
Thr	Arg	Phe	Arg	Ala	Tyr	Ser	Arg	Glu	Tyr	Ala	Glu	Val	Glu	Pro	Leu	
		35					40					45				
Ile	Leu	Glu	Phe	Arg	Asp	Tyr	Arg	Lys	Val	Gln	Ala	Asp	Leu	Glu	Gly	
	50					55					60					
Ala	Gln	Ala	Leu	Leu	Lys	Asp	Ser	Asp	Pro	Glu	Leu	Arg	Asp	Leu	Ala	
65					70					75					80	
Glu	Glu	Glu	Val	Ala	Glu	Ala	Arg	Gly	Arg	Leu	Ala	Ala	Leu	Gly	Asp	
				85					90					95		
Ser	Leu	Gln	Arg	Met	Leu	Leu	Pro	Lys	Asp	Pro	Asn	Asp	Ser	Arg	Asn	
			100					105					110			
Val	Phe	Leu	Glu	Ile	Arg	Ala	Gly	Thr	Gly	Gly	Asp	Glu	Ala	Ala	Ile	
		115					120					125				
Phe	Ser	Gly	Asp	Leu	Phe	Arg	Met	Tyr	Ser	Arg	Tyr	Ala	Glu	Arg	Gln	
	130					135					140					
Gly	Trp	Arg	Ile	Glu	Thr	Leu	Ser	Glu	Asn	Glu	Gly	Glu	His	Gly	Gly	
145					150					155					160	
Tyr	Lys	Glu	Val	Ile	Ala	Arg	Val	Glu	Gly	Asp	Asn	Val	Tyr	Ala	Lys	
				165					170					175		
Leu	Lys	Phe	Glu	Ser	Gly	Ala	His	Arg	Val	Gln	Arg	Val	Pro	Glu	Thr	
			180					185					190			
Glu	Ser	Gln	Gly	Arg	Ile	His	Thr	Ser	Ala	Cys	Thr	Val	Ala	Val	Leu	
		195					200					205				
Pro	Glu	Pro	Asp	Glu	Gln	Ala	Ala	Ile	Glu	Ile	Asn	Pro	Ala	Asp	Leu	
	210					215					220					
Arg	Val	Asp	Thr	Tyr	Arg	Ser	Ser	Gly	Ala	Gly	Gly	Gln	His	Val	Asn	
225					230					235					240	
Lys	Thr	Asp	Ser	Ala	Val	Arg	Ile	Thr	His	Ile	Pro	Ser	Gly	Ile	Val	
				245					250					255		
Val	Glu	Cys	Gln	Glu	Glu	Arg	Ser	Gln	His	Lys	Asn	Arg	Ala	Lys	Ala	
			260					265					270			
Met	Ala	Trp	Leu	Ala	Ala	Lys	Leu	Asn	Asp	Gln	Gln	Gln	Ala	Ala	Ala	
		275					280					285				
Gln	Gln	Ala	Ile	Ala	Ser	Thr	Arg	Lys	Leu	Leu	Val	Gly	Ser	Gly	Val	
	290					295					300					
Arg	Ser	Glu	Arg	Ile	Arg	Thr	Tyr	Asn	Phe	Pro	Gln	Gly	Arg	Val	Thr	
305					310					315					320	

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<210> 318
<211> 36
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic
        primer
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<400> 318
gcggcgcccc atatgaaagc ttctctgctg aaaaag 36

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<210> 319
<211> 26
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic
        primer
```

<400> 319
gcgcagatct gtcgccagg gccgcc 26

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<210> 320
<211> 11
<212> PRT
<213> Pseudomonas aeruginosa
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<400> 320
Thr Ser Ala Cys Thr Val Ala Val Leu Pro Glu
  1                   5                   10
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```
<210> 321
<211> 12
<212> PRT
<213> Pseudomonas aeruginosa
```

<400> 321
Tyr Ala Glu Val Glu Pro Val Ile Leu Ala Phe Arg
1 5 10

<210> 322
 <211> 17
 <212> PRT
 <213> *Pseudomonas aeruginosa*

<400> 322
 Ser Ala Val Arg Ile Thr His Ile Pro Ser Gly Ile Val Val Glu Cys
 1 5 10 15

Gln

<210> 323
 <211> 10
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 peptide motif

<220>
 <221> MOD_RES
 <222> (3)
 <223> Ile or Met

<400> 323
 Gly Val Xaa Val Ser Ala Ser His Asn Pro
 1 5 10

<210> 324
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 peptide motif

<220>
 <221> MOD_RES
 <222> (2)
 <223> Gly or Ser

<220>
 <221> MOD_RES
 <222> (5)
 <223> Variable amino acid

<400> 324
 Gly Xaa Ile Ala Xaa Tyr Lys
 1 5

<210> 325
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 6xHis tag

<400> 325
 His His His His His His
 1 5

<210> 326
 <211> 4
 <212> PRT
 <213> Staphylococcus aureus

<400> 326
 Met Glu Cys Ile
 1

<210> 327
 <211> 6
 <212> PRT
 <213> Staphylococcus aureus

<400> 327
 Met Glu Cys Ile Lys Met
 1 5

<210> 328
 <211> 8
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